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BULLETIN

American Society of
Hospital Pharmacists



HOSPITAL STERILIZING SOLUTIONS

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The BULLETIN

JULY-AUGUST 1951
VOLUME 8 NUMBER 4

American Society of Hospital Pharmacists

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*Nesbitt and Lapides, University of Michigan Medical Bulletin, Vol. 16, pp. 37-42 (1950);
Richardson and Rose, Journal of Urology, Vol. 63, pp. 1113-19 (1950).



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LETTERS

Formulary Established

DEAR SIRs: Many thanks for sending us the five hospital formularies. The help that these gave to me in working on our own is greatly appreciated.

Our hospital has established a Therapeutics Committee consisting of six members. It was formed on March 19 following a meeting of the County Medical Association at which time we presented a paper on the value and purpose of a formulary to the hospital. At present meetings will be held every second Thursday until the formulary is established. Drugs are evaluated for placement into the Formulary. Perhaps there are more efficient methods of getting a formulary together, but our procedure seems to work out satisfactorily.

Thanking you once more for your kindness in procuring the desired formularies for us, I remain gratefully yours,

SISTER MARYSIA, O.S.F., *Pharmacist*
St. Elizabeth's Hospital
Belleville, Ill.

Accepts Position

DEAR SIRs: Thank you for your letter suggesting that I contact Sister Margaret Adelaide at St. Joseph's Hospital in Elmira, N. Y. in regard to a position. I reviewed the pharmacy department this past week and have accepted the position. The present pharmacist is retiring from hospital practice upon my arrival in July.

I sincerely appreciate the information which lead me to this opening. The administrator has shown an interest in improving pharmaceutical service and is cognizant of the valuable training that I have received at Jefferson Hospital.

CHARLES J. KELLER, *Intern Pharmacist*
Jefferson Medical College Hospital
Philadelphia, Pennsylvania

Enjoys Bulletin

DEAR SIRs: Annual dues for membership in the American Pharmaceutical Association and the American Society of Hospital Pharmacists are enclosed. Although I am no longer in hospital work, I like to look over THE BULLETIN.

GLENN A. CARPENTER, *pharmacist*
Beaumont, Texas

From Dr. MacEachern

DEAR SIRs: My deepest appreciation for sending copies of the *Minimum Standard for Pharmacies in Hospital Pharmacy*. The Standards are splendid and I want to incorporate them in the revision of my book "Hospital Organization and Management."

MALCOLM T. MACEachern, M.D., C. M.
Director of Professional Relations
American Hospital Association
18 East Division Street
Chicago 10, Illinois

Grateful for Bibliography

DEAR SIRs: I would like to say that the January-February issue of THE BULLETIN is an outstanding contribution to the progress of hospital pharmacy. We are all extremely grateful to you for gathering the material and having published the *Comprehensive Bibliography on Hospital Pharmacy*. This will be an immense help to me in my future work.

ARTHUR W. DODDS, *Pharmacist*
U. S. Marine Hospital
Norfolk, Va.

Plans for Filtering Rack

DEAR SIRs: Several years ago plans for a filtering rack for five gallon bottles were published in THE BULLETIN. Could you give me information as to when this was published or supply a reprint.

ROBERT D. SILVERMAN, *Pharmacist*
St. Lawrence State Hospital
Ogdensburg, N. Y.

EDITORS NOTE: An article entitled "Automatic Open Filter Beds" appeared in THE BULLETIN 3:191 (Nov.-Dec.) 1946. A diagrammatic drawing of the filter rack is included.

From Turkey

DEAR SIRs: I wish to know something about your publication, THE BULLETIN of the American Society of Hospital Pharmacists.

DR. O. N. YALCINDAG, *Pharmacist*
Peker fabrikasi Hospital
Eskisehir, Turkey

3

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Significance of Standards to Boards of Pharmacy

by Don E. Francke

Boards of pharmacy should find particular significance in the *Minimum Standard for Pharmacies in Hospitals*. This standard is of significance because it reflects the pattern of organization and practice in hospitals; it can be used as a guide for the inspection of hospital pharmacies, and it can be employed to develop a better appreciation of the special pharmacy problems which exist in hospitals. Of special importance is the democratic manner in which this standard was developed. It represents the collective thought of those who are most concerned with the improvement of hospital pharmacy service to the patient. The ASHP and the A.Ph.A. worked closely with and received the understanding cooperation of both the American and Catholic Hospital Associations in developing the basic philosophy of the standard and in working out its details. The American Medical Association has commented favorably on the standard and, at present, the American College of Surgeons is reviewing it. Particular attention was given to the practicability of applying this standard in hospitals of various size and of specialized types. Recognition was given to the principle that the need and the extent of pharmacy service varies with the size as well as with the type of hospital. Obviously a 100 bed general hospital will require a far greater amount of pharmacy service than will a 100 bed mental hospital. No attempt was made to cast all hospital pharmacies into a single mold but, rather, the objective was to adopt certain principles which, when properly interpreted, might be adapted to the particular needs of each individual hospital.

Boards of pharmacy must recognize these principles when they proceed to draft regulations pertaining to pharmaceutical service in hospitals. Failure to do so will result in unnecessary resistance, misunderstanding, and in many cases, frustration. Their approach should be one which is evolutionary and educational rather than aggressive and arbitrary. Before definite regulations are adopted, it will prove most helpful to the individual boards of pharmacy to hold conferences with a committee from the state hospital association. The names of the officers of the

hospital association in each state may be found in *Hospitals*, the official publication of the American Hospital Association, June, 1951, Part II.

When considering regulations pertaining to pharmaceutical service in hospitals, boards of pharmacy should be cognizant of the special needs of hospitals for this service and should recognize that this need varies particularly with the size and type of hospital as well as with other factors such as the inclusion of an outpatient department. For example, in 1950, the distribution of general short term hospitals by number of beds was as follows:

UNDER 50	50 - 99	100 - 249	250 AND OVER
2,333	1,173	1,089	463

In addition, there were 1,575 long term general and specialized hospitals including mental, tuberculosis, and Federal.

The greatest accepted need for the services of one or more pharmacists employed on a full time basis lies in general hospitals of 100 beds and over. Thus the figures cited show that in 1,552 hospitals (1,089 + 463) there is little or no question as to the need of at least one pharmacist on a full time basis. Boards of pharmacy could with little difficulty draw up regulations which could be applied to hospitals in this size range. Undoubtedly some of the hospitals with from 50 to 99 beds, as well as some of the larger long term general and specialized hospitals should have the services of a pharmacist full time. However, boards may have difficulty in framing a broad regulation concerning pharmacy service in these hospitals which could be applied equitably. Hospitals with less than 50 beds present special problems which often require individual attention.

The problem of regulating the practice of pharmacy in hospitals is a new one to many boards of pharmacy. All will agree that it is an important one which must be undertaken with full appreciation of the many factors involved. The Division of Hospital Pharmacy of the A.Ph.A. and the ASHP offers its assistance to the boards of pharmacy with the fundamental problems which arise in this area.

*Results of a critical
evaluation of germicidal
agents in common use in hospitals*

IN a recent issue of THE BULLETIN¹ the formula for a germicidal solution currently in use in the University of Michigan Hospital operating rooms for the disinfection of instruments was given. The adoption of this solution was based in part on the data to be reported in the present communication.

A short note in the same journal² described the procedure followed for the evaluation of the many disinfectants that are dispensed by the hospital pharmacy to the various services. The test was designed especially for the study of those agents regularly employed for the chemical sterilization of optical instruments, bronchoscopes and other appliances equipped with glass or mirrored surfaces embedded in adhesives or plastics, as well as, certain types of catheters which cannot be exposed to high temperatures because of the destructive action.

The introduction of the sulfonamides and the antibiotics during recent years has placed in the hands of the clinicians an impressive armamen-

HOSPITAL STERILIZING SOLUTIONS

By CARL A. LAWRENCE
and ALBERT A. GROVER

tarium of active agents for the treatment of infections caused by the common pyogenic organisms. A false sense of security has resulted in that a definite carelessness has been noted in the handling of instruments contaminated in carrying out the usual physical examinations or operative procedures, and a lack of attention to insure subsequent sterilization.



IMPORTANCE OF THE TUBERCLE BACILLUS

One of the organisms which to date has not been effectively challenged by the modern therapeutic agents is the tubercle bacillus. Thus a bronchoscope or catheter used in examining patients with undiagnosed tuberculosis becomes a potential source of infection if employed later without sterilization. With this possibility in mind an investigation was outlined to determine the action of the various chemical sterilizing agents on human tubercle bacilli. Later the study was extended to include artificial clinical specimens, and sputa from patients with active pulmonary tuberculosis. The procedure was as follows:

Approximately one ml. of a suspension of the tubercle bacillus* (*Mycobacterium tuberculosis*, var. human, Olsen strain) was placed in a sterile 15 ml. centrifuge tube; 5 ml. of the disinfectant was added and the contents of the tube thoroughly mixed with a sterile wooden applicator. The suspension was allowed to stand at room temperature for 10 minutes and then centrifugated at 2000 rpm for 10 minutes. The supernatant fluid was removed and the sedimented organisms resuspended in 5 ml. of sterile physiological solution. Approximately 0.2 ml. of the germ suspension was transferred to each of two slants of Petraghani's medium. As a control on the viability and virulence of the organisms 0.5 ml. of the suspension was injected intraperitoneally into each of three guinea pigs. At the end of a month, and again at the end of a two month period following the injection, tuberculin tests were carried out on each animal and the surfaces of the medium were carefully examined for the presence of colonies of the tubercle bacillus. The guinea pigs were sacrificed in about ninety days and the various tissues examined grossly for the presence of tuberculosis lesions.

EFFECTS OF CHEMICAL STERILIZING AGENTS

The chemical sterilizing substances** included in the preliminary screening procedure together with their respective chemical formulas, if pure compounds, will be found in Table I. Their activity against the pure culture of *Myco. tuberculosis* are given in table 2. With the exception of "Cresylone" and "Germicidal Detergent" (designated as No. 1 and 2 respectively) the solu-

tions listed in table 2 are those supplied or prepared routinely in the University Hospital Pharmacy for use in one or more of the services.

A comparison of the data for the cultural and animal studies in Table II indicates that eight of the solutions had no apparent effect upon the viability of the organisms, there were luxuriant growths in the culture tubes, and the guinea pigs at autopsy gave evidence of active tuberculosis. The remaining twelve compounds, under the conditions of the experiment, exhibited a definite action against the tubercle bacillus. Of particular interest is the consistency of the results of the cultural and animal experiments. Where there was growth of the organisms on the medium, following exposure to the reagents, the guinea pigs injected with the same material gave positive tuberculin reactions and at autopsy tuberculous lesions were present. As a result of these findings only cultural studies were carried out in the subsequent experiments to evaluate the action of the solutions.

The twelve substances which appeared to have a definite germicidal action against the single strain of the tubercle bacillus in the preceding experiment were selected for further study. The experiment was repeated using four strains of human origin: Olsen, H37-Rv and two strains recently isolated from sputa, and the well known Ravenel bovine strain. With but one exception, there was an exact duplication of the cultural data obtained in the first experiment. The single exception appeared with the "Modified Dakin's" or hypochlorite solution No. 10. The culture suspensions treated with this substance remained viable; this was equally true for the Olsen strain which was inhibited in Experiment 1. Note should be made here that Merthiolate Tincture 1:1,000, and a solution of ethyl alcohol 50 percent and acetone 10 percent were included for control purposes and both were found equally effective in preventing the growth of the strains of tubercle bacilli.

EFFECTS OF ADDED MASKING AGENTS

The two previous experiments in this series involved determination of the effects of the various chemical substances upon suspensions of pure cultures of the tubercle bacillus. Since the ultimate goal of this investigation was to evaluate the compounds for routine hospital use it seemed most appropriate to extend the study by masking the germs with organic substances frequently encountered in clinical material and then in the final analysis selecting specimens of sputum from patients with tuberculosis.

Gastric mucin seemed to be an ideal organic substance. Therefore a three percent hog gastric mucin suspension was prepared and sterilized in the autoclave at 121° C for 20 minutes. To two parts of normal human urine, sterilized by passage through a Seitz filter, was added one part of

CARL A. LAWRENCE, Ph.D., is assistant professor and ALBERT A. GROVER, a graduate student in the Department of Bacteriology at the University of Michigan, Ann Arbor.

*The suspension of organisms was prepared by adding approximately 500 mg. of the moist culture taken from the growth on a slant of Petraghani's medium incubated for thirty days, to 50 ml. of sterile physiological saline solution. The suspension was agitated vigorously with glass beads in a mechanical shaker for one hour.

**As designated in the University of Michigan Hospital Pharmacy.

TABLE I. DISINFECTANTS TESTED FOR ANTIBACTERIAL EFFECTS AGAINST *Mycobacterium Tuberculosis*

HOSPITAL DESIGNATION	CHEMICAL NAME	COMPOSITION OF DISINFECTANT	CONCENTRATION USED IN PERCENT
1. Cresylone ^a		Soap emulsion of cresylic acids	2.0
2. Germicidal Detergent ^a		Mixture of high molecular weight alkylamine hydrochloride; Phemerol 2.5%; alcohol 5%; water	20.0
3. Acriflavine	3,6-diamino-10-methylacridine chloride; 3,6-diaminoacridine (mixture)	Aqueous solution	0.1
4. Rx-4002		Propylene glycol 2%; isopropanol (95%) 98%	100.0
5. Isopropanol		Isopropanol 50%; water 50%	100.0
6. Detergicide ^b		Alkyldimethylbenzylammonium chloride 43.4%; nonionic detergent 11.7%; inert ingredients 44.9%.	6.6
7. Instrument Alcohol		Isopropanol 93%; propylene glycol 5%; saponated cresol solution 2%	100.0
8. Merthiolate Aqueous, Untinted	Sodium ethylmercurithiosalicylate	0.1% aqueous solution	100.0
9. Saponated Cresol Solution, N.F.		Soap emulsions of <i>ortho</i> -, <i>meta</i> -, and <i>para</i> -methyl phenols	2.0
10. Modified Dakin's Solution, U.S.P.	Sodium hypochlorite	0.5% aqueous solution	100.0
11. Benzalkonium Germicidal Solution		Isopropanol (99%) 900.0 cc.; Methanol 72.0 cc.; Formalin 37% 144.0 cc.; Benzalkonium Chloride 12.8% ^e 14.4 cc.; Sodium Nitrite 18.0 Gm.; Distilled Water, to make 1800.0 cc.	100.0
12. Mercury Bichloride	Mercury Bichloride	0.1% aqueous solution	100.0
13. Merthiolate Aqueous ^c	Sodium ethylmercurithiosalicylate	0.0033% aqueous solution	100.0
14. Metaphen ^d Tincture Tinted	4-nitro-anhydrohydroxy mercuri- <i>ortho</i> -cresol	0.5% of compound; alcohol 50%; acetone 10%; water 40%	100.0
15. Benzalkonium Chloride Tincture Tinted	Alkyldimethylbenzylammonium chloride	Benzalkonium Chloride 12.8% ^e 14.0 cc.; Acetone 180.0 cc.; Isopropanol 900.0 cc.; Orange I (dye) 3.4 Gm.; Distilled Water, to make 1800.0 cc.	100.0
16. Benzalkonium Chloride ^e Aqueous Untinted with 1.0% Sodium Nitrite	Alkyldimethylbenzylammonium chloride	0.1% aqueous solution with 1.0% sodium nitrite	100.0
17. Milk of Lime	Calcium oxide (unslaked)	Calcium oxide (unslacked) 5.7 lbs.; water 4.5 gals.	100.0
18. Mercuric Oxycyanide	Mercuric Oxycyanide	0.1% aqueous solution	100.0
19. Suture Germicidal Solution		Isopropanol 70.0 cc.; Formalin 37% 0.1 cc.; Sodium Nitrate 0.1 Gm.; Sodium Bicarbonate 0.1 Gm.; Water to make 100.0 cc.	100.0
20. Harrington's Solution		Mercury Bichloride 0.1 Gm.; Hydrochloric Acid U.S.P. 6.0 cc.; Water 30.0 cc.; Isopropanol 99%, to make 100.0 cc.	100.0
21. Merthiolate ^c Tincture Tinted	Sodium ethylmercurithiosalicylate	0.1% of compound; alcohol 50%; acetone 10%; water 40%	100.0

All germicides were diluted or prepared as indicated at the University Hospital

^a = Parke Davis & Company, Detroit, Mich.; ^b = United States Catheter & Instrument Corporation, Glen Falls, N. Y.; ^c = Eli Lilly & Company, Indianapolis, Ind.; ^d = Abbott Laboratories, North Chicago, Ill.; ^e = Zephiran Chloride, Winthrop-Stearns, Inc., New York, N. Y.

the mucin suspension. Approximately 150 mg. of the Olsen and H37-Rv strains of the tubercle bacillus were removed from the surface of Petragani slants and placed in individual bottles containing glass beads. To the bacteria was added 5 ml. of physiological saline solution, the containers fitted with stoppers and shaken vigorously for one hour. Two and one half ml. of each germ suspension was diluted with the urine-mucin mixture to give a total volume of 15 ml. Treatment of aliquot portions of the cell suspensions with the thirteen solutions found effective in the second experiment revealed that all of the substances prevented subsequent growth of the organisms even when suspended in the urine-mucin mixture. With this data it appeared desirable to determine the effects of the same series of compounds upon the bacterial flora of tuberculous sputum.

The sputa were obtained directly from the patients and the procedure of testing through the inoculation of the medium was completed within thirty minutes. In one series, due to the paucity of material in individual specimens, the sputa of three patients were combined and considered as one sample. In another series one patient pro-

vided sufficient sputum so that a single evaluation of all the chemicals could be determined on this one specimen.

The procedure with this material was as follows: Approximately 1 ml. of the sputum was mixed with 5 ml. of solution in a sterile 15 ml. centrifuge tube. The mixing was carried out with a sterile wooden applicator; then the tubes were allowed to remain at room temperature for 10 minutes and subsequently centrifuged at 2000 rpm for 10 minutes. There appeared to be no correlation between the nature of the chemical agent and the resulting physical state of the mixture following treatment and centrifugation of the samples. In practically all instances the stringy, gelatinous sputa retained its characteristic consistency after treatment.

The supernatant fluid was removed from the viscous sediment and the former replaced with 5 ml. of physiological saline solution. After thoroughly mixing with a sterile platinum loop a portion of the viscous material was transferred to the surfaces of two tubes of Petragani's medium. The tubes were sealed with Parafilm and incubated at 37° C. Table III shows the results following sixty days incubation.

TABLE II. A Comparison of the Antibacterial Effects of Various Disinfectants On *Mycobacterium Tuberculosis, var hominis* (Olsen Strain), *In Vitro*.

Hospital Designation of Disinfectants	Guinea Pig Inoculations									Growth on Petrag- nani's Medium at 37°C for 12 Weeks	
	Tuberculin Tests			Autopsy Results (Macroscopic)			Autopsy Results (Microscopic)				
	Animal No.			Animal No.			Animal No.			Tube No.	
	1	2	3	1	2	3	1	2	3	1	2
1. Cresylone*	—	—	—	—	—	—	—	—	—	—	—
2. Germicidal Detergent	+	+	+	+	+	+	+	+	+	+	+
3. Acriflavine	+	+	+	+	+	+	+	+	+	+	+
4. Rx-4002	—	—	—	—	—	—	—	—	—	—	—
5. Isopropanol	—	—	—	—	—	—	—	—	—	—	—
6. Detergicide	+	+	+	+	+	+	+	+	+	+	+
7. Instrument Alcohol	—	—	—	—	—	—	—	—	—	—	—
8. Merthiolate (1:1000 aq.)	+	+	+	+	+	+	+	+	+	+	+
9. Saponated Cresol Solution, N.F. (2% aq.)	—	—	—	—	—	—	—	—	—	—	—
10. Dakins' Solution	—	—	—	—	—	—	—	—	—	—	—
11. Benzalkonium Germicidal Solution	—	—	—	—	—	—	—	—	—	—	—
12. Bichloride of Mercury	—	—	—	—	—	—	—	—	—	—	—
13. Merthiolate (1:30,000)	+	+	+	+	+	+	+	+	—	+	—
14. Metaphen Tincture Tinted	—	—	—	—	—	—	—	—	—	—	—
15. Benzalkonium Tincture Tinted	—	—	—	—	—	—	—	—	—	—	—
16. Benzalkonium Aqueous 1% NaNO ₂	+	+	—	+	+	—	+	+	—	+	+
17. Magma Calcis (Milk of Lime)	+	+	+	+	+	+	+	+	—	+	+
18. Mercuric Oxycyanide	+	+	+	+	+	+	+	+	+	+	+
19. Suture Germicidal Solution	—	—	—	—	—	—	—	—	—	—	—
20. Harrington's Solution	—	—	—	—	—	—	—	—	—	—	—
Control (Saline 0.85%)	+	+	+	+	+	+	+	+	+	+	+

* Table 1 presents the composition of the disinfectants.

— indicates negative results.

+ indicates positive tuberculin reaction, positive pathology or growth of tubercle bacilli on Petragani's medium where indicated.

RESULTS

A casual survey of the data given in the table reveals that treatment with only one of the solutions was followed by no growth of organisms, either the usual resistant oral forms or the tubercle bacillus. Unfortunately this compound, Harrington's solution, is extremely corrosive to metals and has a dissolving action on catheters and cannot be used to sterilize these items.

The solution next in order of effectiveness was the Benzalkonium Germicidal preparation, No. 11. As indicated in the footnote to the table, there was no evidence of any type of growth following four weeks incubation of the medium. However, growth of contaminants, other than tubercle bacilli, appeared on the medium with continued incubation in one of the sputum samples. This solution has no corrosive action on metals and no effect on catheters even when the latter were stored in it for a period of more than one year. This is the solution as stated in the introduction that has been adopted for the sterilization of instruments in the University Hospital¹.

The data in Table III also suggest that some reliance may be placed on "Cresylone" (No. 1); solution Rx-4002 (No. 4); Benzalkonium Chloride Tincture (No. 15) and Merthiolate Tincture (No. 21); for direct action on the tubercle bacillus in sputa although sterilization of the sputa cannot be expected under these conditions.

SUMMARY

The chemical disinfectants in current use in the University Hospital were evaluated for their germicidal activity against tubercle bacilli. This study was prompted by the fact that certain

instruments (bronchoscopes, etc.) and plastic items such as catheters cannot be sterilized by heat because of the adverse effects. Early acceptance of many of the disinfectants used in this study was based on their ability to act upon the common pyogenic organisms. For this reason many of the solutions have been used with some apprehension because of the lack of data concerning their activity against the tubercle bacillus.

Nine, or approximately 50 percent, of the disinfectants were found to be ineffective upon saline suspensions of pure cultures of tubercle bacilli. The remaining solutions had a definite action even when the organisms were suspended in urine and mucin. Evidence of a direct effect on the tubercle bacilli in sputa was obtained with six solutions, although sterilization of the sputa was noted with only one of the chemical agents. Unfortunately the corrosive action of this solution precludes its use with metal instruments and catheters. However, Benzalkonium Germicidal Solution, the active components of which are isopropanol, methanol, formaldehyde, alkyl dimethylbenzylammonium chloride and sodium nitrite, on the basis of these experiments seems to be the most satisfactory solution of those evaluated in this study.

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TABLE III. A COMPARISON OF THE EFFECTS OF DISINFECTANTS ON THE MICROBIC FLORA OF SPUTA FROM PATIENTS WITH PULMONARY TUBERCULOSIS

HOSPITAL DESIGNATION OF DISINFECTANTS	COMPOSITE SAMPLE OF SPUTA FROM THREE PATIENTS		SPUTUM FROM ONE PATIENT	
	TWO MONTHS INCUBATION ON PETRAGNANI'S MEDIUM			
	TUBE NUMBER			
	1	2	1	2
1. Cresylone*	C	—	—	C
4. Rx-4002	—	—	C	C
5. Isopropanol	C	C	C	C
7. Instrument Alcohol	C	C	C	C
9. Saponated Cresol Solution, N. F. (2% aqueous)	C	C	C	C
11. Benzalkonium Germicidal Solution	—	—	C+	C+
12. Bichloride of Mercury	C	C	C	C
14. Metaphen Tincture, Tinted	C	C	C	C
15. Benzalkonium Tincture, Tinted	—	—	C	C
19. Suture Germicidal Solution	C	C	C	C
20. Harrington's Solution	—	—	—	—
21. Merthiolate Tincture Tinted	—	—	C	C
22. Alcohol 50%, Acetone 10%, and Water 40%	C	C	C	C
Sodium Hydroxide 1/N (Digest Control)	+	+	+	+

*Table I presents the composition of the disinfectants. — indicates no growth. + growth of tubercle bacilli colonies. C growth of bacterial and/or mold contaminants within one to two weeks incubation. C+ growth of a mold contaminant after one month incubation.



G. BACTOWSKY and HERBERT L. FLACK

Evaluation of Factors Determining **FREE FLOOR STOCK** in the Hospital Pharmacy

THE hospital has become an important segment of present day community life. It was not considered such 50 years ago, primarily because it did not have the equipment or personnel available for use by and cooperation with the medical profession. The public considered the hospital a place of confinement rather than a temporary haven during diagnosis, treatment, and recovery. Today, everyone may expect to be hospitalized five to six times during his life. The increased use of hospitals has been accepted by physicians and patients as a logical trend in the quest for health. In the past two years, hospital influence has become more specific with the introduction of governmental proposals for the health and welfare of our population. An increased interest has been

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shown by the average citizen in the hospitals of the nation as a result of this governmental move.

Thousands of years ago, hospitals organized by the ancients were built as a result of the fundamental emotions of fear, love, and religion. As civilization progressed, man not only sought to provide for the welfare of his family, but also for his less fortunate neighbor. Fundamentally, this concept is still maintained by the modern twentieth century hospital.

The average person feels that when he enters the hospital, he has the best scientific knowledge at his disposal. This knowledge is not entirely medical, for all technical developments not directly related to medicine are incorporated for his welfare. Physical and spiritual comforts are important together with the specialized medical therapy that is rendered the patient. Service to the patient is the ultimate goal of every hospital.

Seldom is the hospital thought of as an industry. It ranks fifth among industries in the United States from the viewpoint of plant investment, expenditures, income, and personnel employed. Its facilities have increased tremendously in the past two decades, at the beginning of which the

average of all hospital expenditures was \$750,000 per day. At present, an average of \$3,000,000 per day is spent for supplies and maintenance, of which about 5 percent represents cost of pharmaceutical service. About \$8,000,000,000 is invested in the hospitals of the United States and Canada. More than 200,000 non-medical, professional, and technical personnel are employed by hospitals. The service rendered is far more complicated than in any other industry and the personnel required for all the services represents about 40 major classifications of professions and vocations.¹

The 1949 hospital report of the American Medical Association showed a new high in the utilization of hospital service in the United States. A total of 16,659,973 patients were admitted in 1949, an increase of 237,199 patients over 1948. There was reported an increase of registered hospitals from 6,335 to 6,572, of which 4,635 or 70.5 percent were in the non-governmental classification.²

One of the most extensively used therapeutic facilities in the hospital is the pharmacy. In the past, the hospital pharmacy has been looked upon as a retirement post for many pharmacists. The majority of these departments have been located in a dark, dingy and forsaken area of the hospital. During the past 10 years, there has been a metamorphosis in hospital pharmacy. The hospital pharmacist has finally attained his rightful position in the overall picture of hospital pharmacy administration, mainly through the organization of the American Society of Hospital Pharmacists and the inexhaustible efforts of a few energetic, outstanding pharmacists throughout the nation.

The great progress in this field has been exemplified by the consideration of this department as an essential service by the American College of Surgeons, though at present it is listed as one of the adjunct service units. The College has established a set of standards by which the efficiency of a hospital can be rated in respect to the best therapeutic service it offers its patients. This point rating system, as it is called, includes a method for rating the pharmacy through the *Minimum Standard For Pharmacies in Hospitals*.³ This set of pharmaceutical standards can be used by administrators and examiners of the hospitals in evaluating pharmaceutical service.⁴

Hospital standardization is a movement to encourage hospitals to apply certain fundamental principles for the efficient care of the patient. Its object is to promote better hospitalization in all its phases in order to give the patient the greatest benefits that medical science can offer. The acceptance and maintenance of these standards is entirely optional, but the wide and rapid acceptance of these proposals has shown the willingness of hospitals to give the best possible service to humanity.

In the overall picture the main duty of the pharmacist is to furnish pharmaceutical service

to hospital patients. His duty to the hospital as a whole is to offer this service in the most economical manner without infringing on the quality of the medications used. Thousands of dollars are at the disposal of the pharmacist and he must spend this money in the most logical, business-like manner. He must at all times endeavor to effect economics without cutting standards. This point should be foremost in the mind of the pharmacist and thus he must stretch his professional training to envelop a good business training. The true hospital pharmacist, therefore, must be well versed in both professional and business responsibilities.

DEFINITIONS

Though hospitals are essentially unique and individual in character, there are certain basic traits or technics which are characteristic of them all. At this point it is well to define certain terms as follows:

1. Floor stock—that stock of drugs that is usually sent in bulk from the pharmacy to the nursing unit for stock thereon and for use by all patients on the unit.

a. Free floor stock—that which is not charged to the patient, but which is offered as one of the incidentals covered by the room rental or charge. An example is Acetylsalicylic Acid Tablets 0.3 Gm., which in almost every hospital is available as free floor stock in unit containers of 100 tablets. (All references in this treatise to Floor Stock shall imply *Free Floor Stock*, unless otherwise modified).

b. Charge floor stock—that which is charged to the patient, i.e., in many hospitals penicillin is thus classified. The drug is available on the nursing unit in million unit vials and is charged to the patient as each dose of 100,000 units or more is administered.

2. Method of payment of drug charges by Blue Cross (prepaid hospital care plan) for its enrollees in Philadelphia.

a. Payments are included in the per diem payments to the hospital by the Blue Cross, when drug charges are below \$100.

b. Blue Cross will pay to the hospital the cost plus 50 percent for all drugs received during the subscriber's stay, which cost plus 50 percent mark-up exceeds \$100.

c. The average Philadelphia hospital finds at least 40 percent of private patients being Blue Cross subscribers.

3. Ward, Semi-Private, and Private Patients.

a. A ward or pavilion patient is one who pays the minimum daily bed rate and who often is unable to pay the full rate and possibly cannot pay any part of his hospital bill, and receives staff medical service.

b. A semi-private patient is one who enjoys better than ward accommodations, usually with two to six persons being in one room, with certain facilities available that allow privacy, and has a

private physician. In this discussion, semi-private patients will be considered in the same category as private patients.

c. A private patient is one who enjoys the privacy of his own room, pays a premium rate for this fact, and has a private physician.

4. A patient day is that period of service rendered a patient between the census-taking hours on two successive days.

5. Methods of charging for drugs. There are several methods by which hospitals charge patients for drugs consumed.

a. A stock of drugs can be kept on the floor and every time the patient uses any medication, the nurse makes out a charge. Each patient has a special charge form that is attached to his record file on which the nurse lists all drugs used by the patient. This form is sent daily to either the business office or the pharmacy where all items are priced and the charge is posted to the patient's bill.

b. In order to eliminate a large inventory of drugs on the nursing unit, a prescription or a charge voucher is written for the specific medication, is sent to the pharmacy where the medicament is issued, priced, and then sent to the business office for posting.

c. Establishing an inclusive rate for drugs alone, whereby the patient pays a stipulated sum for almost all medications that he may use, and will have to pay extra for certain very expensive or special drugs such as biologicals, hormones, or the newer antibiotics. This is essentially a form of insurance whereby the patient can determine his expenses ahead of time.

Table I represents the practice of charging for drugs carried in stock on the nursing units in 47 general hospitals in the Philadelphia area.

PURPOSE OF PAPER

All hospitals have certain medications as floor stock. These vary from twelve to over two hundred items depending on the type of patient care, i.e., ward, private, specialized, etc. There seems to have been little thought given to the factors involved in including certain items as free

floor stock as against their being a charge drug. It was felt that by investigation into this phase of pharmaceutical practice in the hospital, there could be a standardization of thought and practice, leading to a more efficient pharmacy service with consequent reduction in cost to the patient and to the hospital.

PROCEDURE FOR EVALUATION OF FACTORS

As a means of evaluating the factors determining floor stock in the hospital, visitations were made to ten hospitals in the Philadelphia area. On each of these, the administrator was consulted to provide certain information and then the pharmacy was visited and the chief pharmacist interviewed. Appendix Table A designates these ten hospitals in Philadelphia, with their bed capacity and pharmacy personnel statistics.

Although it was realized that personal conferences were highly desirable, it was deemed advisable to obtain similar information on a nationwide basis. The interview material was prepared as a questionnaire and mailed to the chief pharmacist of 40 hospitals deemed outstanding throughout the Nation. Replies were received from 27 pharmacies. Appendix Table B represents hospitals outside of the Philadelphia area, as to bed capacity and pharmacy personnel.

REASONS FOR HAVING FLOOR STOCK

The establishment of floor stock on the nursing units serves the main purpose of saving personnel time for both nurse and pharmacist. If certain routine medications were not stocked on these units then every time some commonly used drug was needed, the nurse would have to write an order and go to the pharmacy to obtain the drug. The nurse's paper work would increase tremendously, the number of separate orders the pharmacy would have to fill would increase, and there would be a constant stream of personnel to and from the pharmacy or else several messengers would be required. In the overall picture, time would be wasted by everyone concerned. Such a procedure would be an unnecessary evil even in a hospital of one hundred beds. By having certain commonly used medications stocked on the floor, they are

TABLE I. PRACTICE OF CHARGING FOR STOCK DRUGS ON NURSING UNITS*

METHOD OF CHARGING	TOTAL HOSPITALS	BY LOCATION		BY SIZE	
		OUTSIDE PHILADELPHIA	IN PHILADELPHIA	UNDER 200 BEDS	200 BEDS AND OVER
Charge for floor stock carried on the nursing unit	23	9	14	17	6
Do not charge for floor stock carried on the nursing unit	24	8	16	9	15
Total	47	17	30	26	21

*Compiled by The Hospital Council of Philadelphia from a Rate Survey, June, 1949.

TABLE II. DECIDING FACTORS IN MAKING AN ITEM FLOOR STOCK

FACTOR	HOSPITALS OUTSIDE PHILADELPHIA AREA	HOSPITALS IN PHILADELPHIA AREA
Cost	7%	17%
Use	7%	17%
Cost and Use	74%	33%
Emergency	3%	17%
Official Drugs	7%	—
Inclusive Rate	—	8%
Practically all drugs considered free floor stock	—	8%

readily available for use, less paper work is required, duplicate orders for the same item are eliminated, numerous trips to the pharmacy are curtailed in the course of a day, the pharmacist does not have to fill as many single unit containers, and he is allowed to concentrate on other responsibilities and obligations to patient, hospital, and physician.

WHAT CONSTITUTES FLOOR STOCK?

In the average non-inclusive rate hospital, the determination of which items should be floor stock is accomplished in an irrational manner with much secrecy surrounding the reasons thereof. There are no printed lists of the floor stock drugs in a majority of the ten hospitals surveyed in Philadelphia, and the pharmacist often determines a drug's classification at the time it is ordered. The most outstanding consistency of the determination and presentation of floor stock is the inconsistency of the items in the several hospitals.

Should free floor stock be determined on a use basis, on a price basis, on a combination of both, or on some other basis? When questioning pharmacists as to what they considered an expensive floor stock item, figures from 10c and up were

TABLE IV. FREE STOCK COST PER INPATIENT DAY IN THIRTEEN HOSPITALS OUTSIDE PHILADELPHIA

Hospital	Private and Semi-Private	Ward	Average
1	—	—	\$.24
2*	\$.52*	\$.52*	.53*
3	.26	.25	.25½
4	.25	.25	.25
5	.08	.08	.08
7	.096	.096	.096
9	—	—	.13
10*	1.00*	1.00*	1.00*
19	.50	.27	.38½
20	.12	.59	.35½
22*	—	—	1.25*
23	—	—	.10
24*	—	—	.49*

quoted. The answer is difficult to obtain from pharmacist and administrator alike. Table II presents some of the factors considered in making an item floor stock from which it is seen that the cost and use of a medication are usually the factors considered when a drug is issued as floor stock.

FLOOR STOCK COST PER PATIENT DAY

The information that had possibility of the greatest value as a criterion for presenting free floor stock was the cost of such per ward and private patient day. It was unfortunate that in only four Philadelphia hospitals was it possible to obtain such statistics, though in one of these it

*Despite correspondence with the chief pharmacists of these hospitals re-stating the method for obtaining free floor stock costs per inpatient day, these figures were submitted. It is felt that they are excessively high for non-inclusive rate hospitals. They are presented merely for the record. Any inaccuracy may be that these represent the over-all cost of drugs per inpatient day wherein all charge drugs plus floor stock would be included.

TABLE III. FREE FLOOR STOCK COST PER INPATIENT DAY IN FOUR PHILADELPHIA HOSPITALS*

HOSPITAL	PRIVATE AND SEMI-PRIVATE	WARD	MATERNITY	AVERAGE
(B) Three month Average	\$0.076	\$0.057	—	\$0.066
(D) Four month Average	0.029	0.087	—	0.058
(E) Nine month Average	0.17**	0.85**	—	0.51**
(H) One month Average	0.035	0.04	\$0.26	0.11

*These costs do not include any cost for overhead or for personnel costs involved in prepackaging or delivering floor stock.

**It is felt that these figures are not accurate. They were based, however, on the information presented by the chief pharmacist in this hospital. This entry is ruled out.

is felt that the information obtained was not valid. The remaining six pharmacies did not have any financial record of the cost of drugs distributed as floor stock. Costs from these hospitals are presented in Table III. This material was obtained by offering actual assistance in pricing the requisitions and in tabulating the results. Table III shows that the average cost of floor stock per in-patient day for private and semi-private patients varies from 3c to 8c; for ward patients, from 4c to 9c. The information in Table IV represents costs obtained from hospitals outside of the Philadelphia area.

COST OF FLOOR STOCK

One approach to floor stock presentation on a cost basis is to include, in standard unit containers, as many different items as possible, until the total cost of this stock per inpatient day becomes excessive. What cost is excessive? The drugs listed in Table V were presented to ward and private nursing units in a large Philadelphia hospital at an average drug cost of 9c per ward patient day and 3c per private patient day. Personnel costs for presenting these medications as free floor stock were less than one-fourth that of presenting them as charge drugs or as prescriptions for individual

items. This differential in cost was obtained by doing a time study to determine the cost of packaging and labeling 100 tablets by a technician under a pharmacist's supervision, as against a pharmacist dispensing eight units of twelve tablets on individual charges. Counting personnel time to write the charge, send it to the pharmacy, process the charge through the pharmacy and then to the business office, count the tablets, and label the container, we find many wasteful minutes involved. This increased cost becomes especially evident if the item is Acetylsalicylic Acid Tablets 0.3 Gm. which cost about 60c per thousand. The actual cost of twelve such tablets is negligible, the personnel cost being the expensive figure. The charge to the patient for twelve such tablets might be 15c or 25c, or there might be a minimum price charged of 35c or 50c. When the patient receives his bill, he complains about the "nuisance" charge on drugs, an aspect not desirable for good public relations for the hospital or for pharmacy in general. When we consider further that the concept of Blue Cross (prepaid hospital care plans) is to include all drugs in the basic fee paid, we find another reason to include as floor stock as many items as possible, providing the cost does not exceed that indicated herein.

TABLE V. FREE FLOOR STOCK LIST

PREPARATION	UNIT	PREPARATION	UNIT
POWDERS			
Compound Alum Powder, JH**	300	*Aminophylline, U.S.P., 0.5 Gm./2 cc.; 2 cc.	12
Powder A, JH	60	Caffeine Sodium Benzoate, U. S. P.,	
Powder B, JH	60	0.5 Gm./2 cc.; 20 cc.	1
Flaxseed, N.F.	200	*Calcium Gluconate, U.S.P., 10%; 10 cc.	1
Magnesium Sulfate, U.S.P.	400	*Dextrose, U.S.P., 50%; 50 cc.	1
Compound Senna Powder, N.F.	115	*Digitoxin, U.S.P., 0.2 mg./cc.; 10 cc.	1
Sodium Bicarbonate, U.S.P.	280	Ephedrine Sulfate, U.S.P., 50 mg./cc.; 1 cc.	24
Sodium Chloride, U.S.P.	2600	Epinephrine, U.S.P., 1:1000; 30 cc.	1
Sodium Perborate, N.F.	160	*Ergonovine Maleate, U.S.P. (<i>Maternity</i>),	
Talcum, U.S.P.	1200	0.2 mg.	12
Wood Alcohol (<i>for lamp</i>)	240	*Histamine Phosphate, U.S.P., 2.75 mg./5 cc.;	
BULK LIQUIDS (INTERNAL AND EXTERNAL)			
Antiseptic Solution, N.F.	500	5 cc.	1
Benzalkonium Chloride Tincture, JH	1000	*Insulin, U.S.P., U-40; 10 cc.	1
Benzalkonium Chloride Solution, 10%	1000	*Protamine Zinc Insulin, U.S.P., U-40; 10 cc.	1
Castor Oil, U.S.P.	500	*Liver, U.S.P., 15 U./cc.; 10 cc.	1
Dextrose (<i>Tolerance Test</i>), 50%	200	*Liver (Crude), U.S.P., 4 U./cc.; 10 cc.	1
Ethyl Oxide (<i>Commercial</i>)	500	Magnesium Sulfate, N.F., 50%; 50 cc.	1
Hamamelis Water, N. F.	500	*Menadione Sodium Bisulfite, U. S. P.,	
Hydrogen Peroxide Solution, U.S.P.	500	2.5 mg./cc.; 0.5 cc.	24
Iodine Tincture, U.S.P., 2%	500	*Menadione Sodium Bisulfite, U.S.P., 5 mg./cc.;	
Magnesia Magna, U.S.P.	500	1 cc.	24
Mercury Bichloride Solution, JH, 0.5 Gm./cc.	500	*Mersalyl and Theophylline, U.S.P.; 2 cc.	20
Liquid Petrolatum, U.S.P.	1000	*Neostigmine Methylsulfate, 1:1000; 10 cc.	1
Light Liquid Petrolatum, N.F.	500	*Nicotinamide, U.S.P., 100 mg./cc.; 20 cc.	1
INJECTIONS			
Atropine Sulfate, U.S.P., 1 Mg./cc.; 20 cc.	1	*Nicotinic Acid, U.S.P., 100 mg./2 cc.; 2 cc.	15
*Aminophylline, U.S.P., 0.25 Gm./10 cc.; 20 cc.	1	Nikethamide, U.S.P., 25%; 20 cc.	1
*These items are not included as free floor stock for private patients, but are ordered as charge prescriptions.			
**JH—JEFFERSON HOSPITAL Formulary Item.			
		*Phenobarbital Sodium, U.S.P., 0.12 Gm./cc;	
		20 cc.	1
		Procaine Hydrochloride, U.S.P., 1%; 50 cc.	1
		Procaine Hydrochloride, U.S.P., 2%; 50 cc.	1
		*Sodium Ascorbate, 100 mg./2 cc.; 2 cc.	12
		*Sodium Ascorbate, 500 mg./5 cc.; 5 cc.	12
		Sodium Citrate, JH, 12.5%; 100 cc.	1

TABLE V. FREE FLOOR STOCK LIST (Continued)

PREPARATION	UNIT	PREPARATION	UNIT
Sodium Citrate, JH, 2.5%; 50 cc.	1	Ephedrine Sulfate, JH, 1% (Nasal)	90
*Sodium Lactate, U.S.P., Concentrate; 40 cc.	1	Glycerin, U.S.P.	90
*Thiamine Hydrochloride, U.S.P., 100 mg./cc.; 10 cc.	1	Diluted Hydrochloric Acid, U.S.P.	90
*Vitamin B Complex, JH; 10 cc.	1	Strong Iodine Solution, U.S.P.	90
CAPSULES AND TABLETS		Lactic Acid, U.S.P.	90
Acetylsalicylic Acid, U.S.P., 0.3 Gm.	100	Camphorated Opium Tincture, U.S.P.	90
Acetylsalicylic Acid Compound, JH	90	Paraldehyde, U.S.P.	90
Acetophenetidin, U.S.P., 0.2 Gm.	100	Peppermint Water, U.S.P.	90
Aminophylline, U.S.P., 0.1 Gm.	100	Compound Pepsin Elixir, N.F.	90
Ammonium Chloride, N.F., 0.3 Gm.	150	Phenobarbital Elixir, U.S.P., 15 mg./4 cc.	90
Ammonium Chloride, N.F., (<i>Enteric Coated</i>) 0.5 Gm.	75	Potassium Citrate, JH, 0.6 Gm./4 cc.	90
*Ascorbic Acid, U.S.P., 100 mg.	100	Potassium Iodide, N.F., 1 Gm./cc.	90
Bismuth Subcarbonate, N.F., 0.3 Gm.	50	Sodium Bicarbonate, JH, 0.6 Gm./4 cc.	90
Cascara Sagrada, U.S.P., 0.3 Gm.	100	Sodium Bromide, JH, 0.6 Gm./4 cc.	90
*Diethylstilbestrol, U.S.P., 1 mg.	50	Sodium Citrate, JH, 0.6 Gm./4 cc.	90
*Diethylstilbestrol, U.S.P., 5 mg.	50	Sodium Phosphate, N.F.	90
Digitalis, U.S.P., 0.1 Gm.	100	Sodium Salicylate, JH, 0.6 Gm./4 cc.	90
*Digitoxin, U.S.P., 0.1 mg.	100	Terpin Hydrate Elixir, N.F.	90
*Digitoxin, U.S.P., 0.2 mg.	100	Terpin Hydrate and Codeine Elixir, N.F.	90
*Diphenhydramine Hydrochloride, U.S.P., 50 mg.	50	Three Bromides Elixir, N.F.	90
*Diphenylhydantoin Sodium, U.S.P., 30 mg.	50	Wild Cherry Syrup, U.S.P.	90
*Diphenylhydantoin Sodium, U.S.P., 0.1 Gm.	50	LIQUIDS (EXTERNAL AND MISCELLANEOUS)	
Ephedrine Sulfate, U.S.P., 25 mg.	50	Air Sweetener, JH	120
*Ergonovine Maleate, U.S.P. (<i>Maternity</i>), 0.2 mg.	1	Deodorizing Solution, JH	120
Ferrous Sulfate, U.S.P., 0.3 Gm.	100	Benzalkonium Chloride Tincture, JH	90
Glyceryl Trinitrate, U.S.P., 0.3 mg.	200	Compound Benzoin Tincture, U.S.P.	90
Glyceryl Trinitrate, U.S.P., 0.45 mg.	200	Calamine Lotion, U.S.P.	90
*Hexavitamin, U.S.P.	100	Phenolated Calamine Lotion, N.F.	90
*Menadione, U.S.P., 1 mg.	100	Collodion, U.S.P.	60
*Menadione, U.S.P., 5 mg.	100	Methocel Lotion, JH	90
Nicotinamide, U.S.P., 50 mg.	100	Methylene Blue Solution, JH, 1%	90
Nicotinic Acid, U.S.P., 0.1 Gm.	100	Methylrosaniline Chloride Solution, JH, 1%	90
Ox Bile Extract, U.S.P., 0.3 Gm.	100	Sodium Citrate Solution, JH, 3%	90
Potassium Permanganate, N.F., 0.2 Gm.	50	Tetracaine Hydrochloride, U.S.P., 1%	90
Soda Mint, JH, 0.3 Gm.	100	Tetracaine Hydrochloride, U.S.P., 2%	90
Sodium Bicarbonate, U.S.P., 0.3 Gm.	100	OINTMENTS	
Sodium Bicarbonate, U.S.P., 0.6 Gm.	100	Aluminum Paste, JH	60
Sodium Chloride and Dextrose, N.F.	50	Boric Acid, U.S.P.	120
Sodium Salicylate, U.S.P., 0.3 Gm.	100	Ethyl Aminobenzoate, U.S.P.	120
Sodium Salicylate, U.S.P., (<i>Enteric Coated</i>), 0.3 Gm.	90	Hydrophilic Ointment, U.S.P.	60
*Succinylsulfathiazole, U.S.P., 0.5 Gm.	175	Petrolatum, U.S.P.	240
*Sulfadiazine, U.S.P., 0.5 Gm.	50	White Petrolatum, U.S.P.	120
*Thiamine Hydrochloride, U.S.P., 50 mg.	50	Phenol Calomel Paste, JH	60
Thyroid, U.S.P., 15 mg.	100	Rose Water Ointment, U.S.P.	120
Thyroid, U.S.P., 30 mg.	100	Zinc Oxide Ointment, U.S.P.	120
Thyroid, U.S.P., 60 mg.	100	MISCELLANEOUS	
*Tripelennamine Hydrochloride, 50 mg.	100	Droppers	1
*Triasyn B. Capsules, U.S.P., (B Complex)	75	Lubricating Jelly, 5 oz. tube	1
Dried Yeast Tablets, U.S.P., 0.3 Gm.	200	Glycerin Suppositories, U.S.P., (Adult)	12
LIQUIDS (INTERNAL)		Glycerin Suppositories, U.S.P. (Child)	12
*Aluminum Hydroxide Gel, U.S.P.	180	GALLON STOCK	
Ammonium Chloride, JH, 0.6 Gm./4 cc.	90	Alcohol, JH, (For rubbing), 45%	4000
Aromatic Ammonia Spirit, U.S.P.	90	Benzalkonium Chloride Solution, U.S.P. 10%, to make	4000
Belladonna Tincture, U.S.P.	60	Diluted Ammonia Solution, U.S.P.	4000
Cascara Sagrada Fluidextract, U.S.P.	90	Saponated Cresol Solution, N.F., (Concentrate), to make	4000
Aromatic Cascara Sagrada Fluidextract, U.S.P.	90	Labarraque's Solution (Concentrate), to make	4000
Castor Oil, U.S.P.	90	Chlorinated Lime Solution, JH	4000
Chloral Hydrate, JH, 0.6 Gm./4 cc.	90	Soap (Concentrate), to make	4000

TABLE VI. NARCOTIC FLOOR STOCK FOR WARD AND PRIVATE PATIENTS

PREPARATION	UNIT
*Cocaine Hydrochloride Solution, JH, 1%	90 cc.
*Cocaine Hydrochloride Solution, JH, 2%	90 cc.
*Codeine Injection, JH, 30 mg./cc.	20 cc.
*Codeine Oral Solution, JH, 20 mg./4 cc.	150 cc.
*Meperidine Hydrochloride Injection, U.S.P., 50 mg./cc.	20 cc.
Meperidine Hydrochloride Tablets, U.S.P., 50 mg.	25
*Methadone Injection, N.N.R., 10 mg./cc.	20 cc.
Methadone Tablets, N.N.R., 5 mg.	25
*Morphine Injection, U.S.P., 30 mg./cc.	15 cc.
Opium Tablets, JH, 30 mg.	25
Opium Tincture, U.S.P.	15 cc.
*Opium and Belladonna Suppositories, JH, 30 mg.	12
*Opium and Belladonna Suppositories, JH, 60 mg.	12
*Papaverine Hydrochloride Injection, U.S.P., 30 mg./cc.	20 cc.
Papaverine Hydrochloride Tablets, JH, 30 mg.	25
Opium Tablets, JH, 30 mg.	25

*These preparations are manufactured in the hospital pharmacy.

By maintaining a record of the penicillin distributed to ward patients over a period of time, and including its cost with that of the free floor stock, it was found that there was not over a 3c rise in the cost of floor stock per ward patient day. The total was then about 12c per ward patient day. At present penicillin is issued as the only charge

TABLE VII. NON-STANDARD WARD FLOOR STOCK

Acetic Acid Solutions
Acriflavine Solution
Alcohol, 95%
Aluminum Acetate Solutions
Aminophylline Suppositories
Atropine Ophthalmic Solutions
Benzene
Buffered Citrate Solution (Suby's)
Cod Liver Oil, U.S.P.
Oleovitamin A and D Concentrate, U.S.P.
Formaldehyde Solutions
Homatropine Ophthalmic Solutions
Merbromin Solutions
Methyl Salicylate, U. S. P.
Olive Oil, U.S.P.
Phenolsulfonethalein Injection, U.S.P.
Physostigmine Ophthalmic Solutions
Pilcarpine Ophthalmic Solutions
Sodium Carbonate Powder
Sodium Chloride Tablets (Enteric Coated)
Diluted Sodium Hypochlorite Solution
Typhoid Mixed Vaccine
Urea, U.S.P.
Vitamin A and D Ointment
Wool Fat
Hydrous Wool Fat
Yeast Powder

floor stock item in this hospital, though it is not the only item chargeable to ward patients.

The narcotics listed in Table VI are also distributed as free floor stock to all patients in this hospital. Any other narcotics ordered for private patients are charged to the patient, though an attempt is made to discourage such orders. With a few exceptions, ward patients can receive only those listed in Table VI.

Certain items are not used routinely and are not included on the printed requisition. These are ordered on a "write-in" type requisition as non-standard floor stock. Table VII illustrates some of the non standard free floor stock items that are issued by this hospital.

It has been reported by a hospital of 120 beds that the pharmacy can give away routine drugs and still make a profit. It was found that there were less complaints from patients about drug charges, since all small 10c charges were eliminated. Patients were charged for special drugs at a minimum of twice the cost. Charges thus made have absorbed the routine drug costs.

MAXIMUM UNIT COST OF FLOOR STOCK

The majority of drugs acceptable as floor stock are determined by the cost and use of the medication (Table II.) In all hospitals, except one from each area surveyed, there was no differentiation between the floor stock drugs offered ward patients and those for private patients. In both of the hospitals in exception, there is an active hospital formulary from which many medications may be ordered for ward patients without a charge. If these drugs are not used routinely, they are ordered for ward patients without a charge. If these drugs are not used routinely, they are ordered as non-standard floor stock. The maximum unit cost of free floor stock for private patients in hospital number "20" is \$1.00, while in hospital "D" it is \$.50. The maximum unit cost of free floor stock for ward patients in hospital "D" is \$3.85, while in hospital number "20" there is no maximum unit cost. In the majority of cases, charges are made to ward patients for all antibiotics, hormones, and other specialty medications. These items are not made available as free floor stock.

INVENTORY CONTROL OF FLOOR STOCK

In six hospitals in the Philadelphia area, requisitions for floor stock issued to the nursing units are not priced. Thus, no financial record is available from which the cost of floor stock per patient day can be determined. By pricing any type of requisition and having periodic checks of the stock on the nursing units, a control can be maintained of floor stock and other drugs. If the patient day cost of floor stock for a specified nursing unit should be higher than the average over a period of time, it may indicate thievery of drugs or indiscriminate use. Monthly personal inspection of nursing units

TABLE VIII. PERSONS DETERMINING FLOOR STOCK IN TWENTY-SEVEN HOSPITALS OUTSIDE OF PHILADELPHIA

Administrator	1
Pharmacist	19
Pharmacist and Therapeutics Committee	2
Pharmacist and Administrator	2
Pharmacy and Therapeutics Committee	1
Pharmacist and Nursing Department	2

will aid to eliminate hoarding of expensive drugs, improper storage, use of outdated biologicals, etc.

WHO DETERMINES FLOOR STOCK?

The medications which constitute floor stock are designated by various persons in the hospital. In eight of the ten Philadelphia hospitals, the chief pharmacist decides which drugs will be stocked routinely on the floors. In the two other hospitals, the chief pharmacist determines this fact, with consultative cooperation of the Pharmacy and Therapeutics Committee and the Administrator. In the 27 hospitals outside of Philadelphia, Table VIII designates those persons who decide which drugs shall be floor stock. In both categories of hospitals surveyed, the pharmacist, in the majority of cases, determines which drugs will be stocked on nursing units for routine use.

MANUFACTURING AS A FACTOR

It might be stated that all items manufactured in the hospital pharmacy probably could be made floor stock, with charges being made for drugs which are ordered that are of a proprietary nature, or that at least cannot be manufactured in the pharmacy. This factor can be re-stated as, the cost of floor stock can be at a minimum if the majority of floor stock items are manufactured in the pharmacy.

By manufacturing certain preparations, routine drugs can be dispensed as floor stock without charge to the patient, and with little increase in the patient day cost. If, for example, a 30 mg. dose of oral codeine sulfate were to be furnished in a suitable aqueous vehicle instead of in the form of compressed tablets, considerable reduction in cost can be obtained as illustrated in Table IX.

There is a saving of approximately 50 percent when an oral codeine solution is prepared in comparison with the same dose of codeine presented as compressed tablets. This last differential in favor of manufacturing in the hospital pharmacy is made even more impressive when preparations containing alcohol are included, since the hospital is privileged to purchase alcohol free of the tax of \$17.10 per wine gallon.

ORDERING AND DISTRIBUTION OF FLOOR STOCK

The ordering and distribution of floor stock should be planned in such a manner that a minimum of time is consumed by nurse, pharmacist, and other personnel involved in the procedure. The first person involved in ordering floor stock drugs is the medication nurse on the nursing unit. Floor drugs are ordered by any of the following methods:

1. *Use of a printed requisition.* This requisition is prepared by the pharmacy and lists all available standard floor stock items including potency, and amount, volume or weight of item in the standard container. The nurse ordering floor stock has merely to check the number of items required. By having a complete printed list, the nurse knows which items are available and can use the list as an inventory of stock on hand. A competent medication nurse can estimate the number of units of each item required from one order period to the next. If existing stock is low, it is easy to record the number of items required to bring the inventory up to a maximum. This theory of maximum-minimum inventories is an accepted procedure in industry and can easily be applied to the ordering of floor stock at weekly periods by the nursing service. This method is the most efficient from standpoint of time consumed by the nurse in ordering.

2. *Use of a "write-in" requisition.* The requisition is generally one that is used throughout the hospital for ordering other supplies and consists of a series of blank lines as part of the form. Use of a hospital formulary will facilitate the nurse's ordering of stock by the note book or "write-in" requisition method. Items that are available as floor stock can be so designated in the formulary and the nurse has merely to consult this text whenever in doubt. A disadvantage to the use of a "write-in" requisition is that there is no semblance of order to the items being requested. The nurse usually

TABLE IX. COST COMPARISON OF ORAL CODEINE SOLUTION AND CODEINE TABLETS

PREPARATION	MANUFACTURED COST	COST PER 30 MG. DOSE	COMPARISON OF COST IN AN EQUIVALENT OF DOSES
Codeine Sulfate Oral Solution 30 mg./4cc.	\$.45/150 cc.	\$.012	\$.45 for 37½ doses
Codeine Sulfate C.T. 30 mg. each	\$25.29/100	\$.025	\$.94 for 37½ doses

TABLE X. FORMS USED IN ORDERING FLOOR STOCK

HOSPITALS	PRINTED REQUISITION	PARTLY PRINTED REQUISITION	WRITE-IN NOTEBOOK	WRITE-IN REQUISITION
Philadelphia Area	2	2	4	2
Outside Philadelphia Area	19	—	4	4

orders items by checking the containers which have been emptied in the period since the last order. Thus when the pharmacist fills such a requisition, he will probably find digitoxin tablets on the first line, magnesia magna on the next line, lubricating jelly next, then iodine tincture, hand lotion, petrolatum, aspirin tablets, etc., with no logical sequence. This requires much more time to process than the printed requisition previously mentioned.

In evaluating a printed requisition against the "write-in" type as to the time saved in using the former, a time study was taken, wherein the medication nurse was requested to order all the necessary stock items, first by writing each item on a requisition and then by ordering the same items on a printed form. It took the nurse 12 minutes to order forty items by use of a "write-in" requisition, in contrast to an ordering time of five minutes when a printed requisition was used. When the drug box was filled in the pharmacy, it took only five minutes to fill this forty-item requisition, using the printed requisition and with pre-packaged stock. All pre-packaged items are arranged on a series of shelves in the same order that they appear on the printed requisition. Thus, the person filling the drug box wastes no time in looking for any of the listed items.

3. *The Use of an ordinary bound notebook wherein the nurse records the needed items.* The notebook is sent to the pharmacy as a request for stock. The listed items are issued by the pharmacy and sent to the nursing unit. When the complete notebook has been filled, it is usually discarded. There are several disadvantages of this method. Each succeeding nurse who orders stock has to familiarize herself with the available stock, the proper listing, and in some instances, the location of the notebook. From the hospitals surveyed, certain types of records are used in ordering floor stock, as illustrated on Table X.

Two types of printed requisitions are in common use. The first has the specific floor use designated for certain items which eliminates the use of several forms for the various hospital units. The other requires specific printed requisitions for each nursing unit or type nursing unit. The use of either of these requisition forms provides a means for pricing requisitions rapidly. Each requisition has a row of evenly spaced holes along the top and the requisitions are arranged on a series of pegs. By beginning at the right and placing each succeeding form one peg to the left, the last

column on each requisition is visible. By placing a straightedge across the series of forms, one can tabulate rapidly the number of units of each item dispensed. This figure is then multiplied by the unit cost and the total cost is obtained.

METHODS OF PREPARING FLOOR STOCK

It is difficult to obtain any concrete statistics derived from Appendix Table C. Many factors must be considered before one can draw any definite conclusion as to the best method of preparing and distributing floor stock. This appendix table represents the over-all picture of preparation and distribution of floor stock to the nursing units. The two factors which are not presented are the size of the hospital and the average number of items issued. As seen in hospital No. 3, only fifteen minutes is consumed by one person in filling twelve drug boxes, by refilling the containers as they are returned; while in hospital C, the same number of drug boxes are filled by two persons in two hours. This variation may be accounted for by (1) the difference in the number of floor stock items, (2) the procedure used in filling the containers.

It was observed in many hospitals that much time is wasted by an improper manner of refilling containers. Instead of removing all empty containers from the drug box, and grouping them together by identical preparations and then filling them all at once, each container is filled separately as it is removed from the box. In other words, the stock container may be opened and closed at least six times before floor stock containers were all filled.

In hospital H, by having pre-packaged floor stock and a printed requisition, it takes only about one-half hour to fill fifteen drug boxes. Previously when the containers were refilled daily and there was no printed requisition, at least two hours daily were consumed in filling drug boxes. In hospital D, by having the same procedure and

TABLE XI. PREPARATION OF FLOOR STOCK CONTAINERS

HOSPITALS	REFILL CONTAINERS	PRE-PACKAGE	PARTIALLY.. PRE-PACKAGED
Philadelphia Area	7	3	0
Outside Philadelphia	8	12	7

having floors assigned certain days for ordering stock, an average of six boxes are filled daily by three persons in fifteen to thirty minutes. When there was no printed requisition and the stock was only partially pre-packaged, an average of twenty drug boxes were filled daily by six persons in an average of one hour.

The use of pre-packaged stock and printed requisitions has proved to be effective in presenting floor stock. Whenever non-professional personnel are employed, they can fill the drug boxes, which can be checked by a pharmacist. The empty containers then can be refilled by the technician and by use of proper control methods, errors can be avoided and the pharmacist need not

check constantly to insure that correct stock containers are being filled.⁵ If there is no technician to do this job, the pharmacist can refill the containers during the day if he does not have a reserve stock or if there is an adequate reserve, he can refill the empty containers several times a week. In this manner, he will have more time for his other responsibilities of administration, compounding, and manufacturing.

In presenting items as floor stock, several procedures are used. Table XI illustrates the procedures used in packaging floor stock containers. In the Philadelphia area seventy percent of the surveyed hospitals refill containers daily as they are returned, while twenty nine percent of the

APPENDIX TABLE A. BED CAPACITY AND PHARMACY PERSONNEL OF HOSPITALS

HOSPITALS	AVERAGE MONTHLY PATIENT DAY LOAD		CAPACITY			NUMBER OF PHARMACIST PERSONNEL				NON-PROFESSIONAL PERSONNEL
	PRIVATE	WARD	BEDS	BASIS-NETS	OUTPATIENTS	FULL TIME	PART TIME	STUDENTS IN COLLEGE	POST GRADUATE STUDENTS	
A	3,770	3,013	304	55	1,295	2	0	2	0	2
B	715	2,772	304	55	3,331	1	0	0	0	1½
C	4,686	3,611	364	0	6,884	2	1	0	0	1
D	9,966	12,392	696	79	—	6	0	0	5	8
E	2,178	1,607	155	25	2,190	1	0	1	0	1
F	2,707	1,431	150	45	772	1	0	1	0	1
G	3,676	2,855	310	60	4,996	3	0	0	0	1
H	5,648	3,230	480	59	3,404	2	1	0	0	2
I	2,293	1,427	144	48	2,806	1	1	0	0	0
J	6,478	10,239	708	63	10,155	3	0	0	0	4
1	Total	4,500	185	40		2	0	0	0	1
2	7,500	3,000	300	50		1	0	0	0	1
3	3,702	321	200	36		1	0	0	1	1
4	3,300	750	147	32		1	1	1	0	1
5	3,567	3,487	301	72		2	0	0	2	2
6	9,750	1,500	400	40		1	0	0	0	1
7	Total	13,710	490	80		2	0	0	0	5
8	Total	13,800	500	52		3	0	0	2	2
9	5,567	820	266	50		2	0	0	0	3
10	740	5,089	275	0		2	1	0	0	1
11	5,114	671	205	60		2	0	0	0	0
12	1,200	1,800	105	10		1	0	0	0	0
13	3,000	3,090	255	53		2	0	0	0	1
14	—	—	168	33		1	1	0	0	1
15	11,055	8,872	728	129		6	0	0	0	3
16	—	—	1154	64		14	0	3	0	16
17	5,600	8,200	524	55		6	0	0	0	4
18	9,480	12,990	967	75		6	1	0	4	28
19	1,835	6,472	520	60		4	0	2	0	2
20	8,100	17,640	1,074	112		11	0	0	0	7
21	4,288	4,222	717	84		5	0	0	0	3
22	1,295	335	205	50		1	0	0	0	2
23	5,100	5,700	200	50		1	0	0	0	2
24	7,623	1,963	324	63		2	1	0	0	1
25	11,141	Total	388	65		4	1	0	1	5
26	5,000	0	250	50		2	1	0	0	1
27	Total	142,889	502	103		2	2	0	0	3

Hospitals designated by a letter are located in the Philadelphia area; those designated by a number are outside the Philadelphia Area.

All Hospitals are general, short term, except "B" which is specialized.

hospitals outside Philadelphia follow this procedure. Thirty percent of the hospitals of the Philadelphia area completely prepackage all floor stock, while about forty five percent of the hospitals outside of Philadelphia use this method.

The pre-packaged concept, previously described, is most efficient for personnel time involved. Other concepts include refilling the stock containers as they are returned to the pharmacy from the nursing units and actually writing floor name on the label. Thus the floor must return a container in order to obtain additional stock, or else the nurse in charge must explain that the container was broken, lost, etc. The label is covered with

some protective coating to prevent it from being soiled.

Whatever procedure is used, it is desirable to obtain printed labels for all items of standard floor stock. The approximate cost of labels is from \$1 to \$2 per thousand, adding but a very small sum to the cost of presenting floor stock, but saving much personnel time and providing a standardized label that is easily legible and presents a professional appearance.

DISCUSSION

Up to some point which has not been conclusively determined, it should be possible to dispense the majority of drugs required in a well

APPENDIX TABLE B. PROCEDURES IN PREPARING AND DISTRIBUTING FLOOR STOCK AND PERSONNEL TIME CONSUMED THEREIN OF TWENTY-SEVEN HOSPITALS OUTSIDE PHILADELPHIA AREA

HOSPITAL	FREQUENCY OF ORDERS	NUMBER OF DRUG BOXES	NO. OF PERSONS TO FILL BOXES	TIME CONSUMED IN FILLING BOXES	DRUG BOXES DISTRIBUTED BY
PREPACKAGED STOCK					
2	3 Times a Week	15	2	2 hours	Pharmacy
7	Daily	17	1	1½-2 hours	Pharmacy
8	2 Times a Week	—	3	—	Pharmacy
9	Daily	13	1	1½ hours	Pharmacy
10	4 Times a Week	5	2	2 hours	Pharmacy
13	Daily	14	2-3	45 min.	Orderly
14	Daily	6	2	1 hour	Central Delivery Service
15	Daily	42	2	2½-3 hours	Pharmacy
19	Daily	42	1	1 hour	Pharmacy
23	Daily	7-8	3	2 hours	Each floor picks up own
24	Daily	20	2	2½ hours	Pharmacy
25	3 Times a Week	22	1	2 hours	Pharmacy
PARTIALLY PREPACKAGED STOCK					
1	Weekly	8	3	4 hours	Floor Aide
6	3 Times a Week	—	2	3 hours	Pharmacy
16	Daily	40	6	3 hours	Central Delivery Service
17	Daily	25	8	2 hours	Pharmacy
18	Daily	50 - 60	5	1½ hours	Pharmacy
21	Daily	25	3	1 hour	Orderly
27	Weekly	—	—	—	Each floor picks up own
REFILL CONTAINERS					
3	Daily	12	1	15 min.	Central Delivery Service
4	Daily	6	1	1 hour	Student Nurse
5	Daily	14	2	2 hours	Central Delivery Service
11	Daily	12	2	1½ hours	Orderly
12	Daily	—	1	—	Pharmacy
20	Daily	56	4	3 hours	Pharmacy
22	Daily	Varies	1	Varies	Each floor picks up own
26	Daily	12	1	—	Pharmacy

organized hospital pharmacy, as floor stock rather than as charge items. This can be accomplished by:

1. Manufacturing of the preparations in the pharmacy; thus reducing the cost and making the item susceptible to dispensing as floor stock, whereby previously it was costly enough to require dispensing as a charge drug.

2. Use of a printed requisition, whereby, it is possible to add to the efficiency of the nursing service in ordering, and of the pharmacy in dispensing floor stock.

3. Use of prepackaging technics, where it is possible to prepare and dispense effectively floor stock medications with a minimum use of pharmacist personnel time.

4. Issuing standard and non-standard floor stock in preference to charge prescription items for certain inexpensive medications, thereby, eliminating small "nuisance" charges from 10c to probably 75c or \$1.00.

CONCLUSION

Through visitations to many hospitals, it was observed that certain practices of dispensing drugs to inpatients were consistently inconsistent. In one hospital, 90 percent of all drugs dispensed were charged to the inpatients. In another hospital, 85 percent of all drugs dispensed were free to the inpatients. There were varying degrees of inconsistency in the other hospitals visited.

In order to establish a more consistent method of charging for drugs dispensed by the pharmacy, an inclusive rate for drugs should be established by the individual hospitals for patients who are not enrolled in a hospitalization program that pays

for a certain percentage of drugs used. Thus, when a patient is admitted to the hospital, there will be an initial charge for drugs posted on his bill, and there will probably be no other drug charges during the patient's stay in the hospital.

This charge should be based either on the category of the patient i.e. private, ward or on the specialized service rendered the patient i.e. medical, surgical, pediatric, obstetrical etc. In the latter situation, records of the drugs dispensed to specialized services should be maintained and priced for at least a twelve month period. A value should be determined that will be based on the cost per patient day of each category. This cost should include at least the cost of drugs plus a definite markup that is based on the pharmacy department overhead which includes costs of supplies, personnel, rent, light, heat, etc.

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APPENDIX TABLE C. PROCEDURES IN PREPARING AND DISTRIBUTING FLOOR STOCK AND PERSONNEL TIME CONSUMED THEREIN OF TEN HOSPITALS IN PHILADELPHIA AREA

HOSPITAL	FREQUENCY OF ORDERS	NUMBER OF DRUG BOXES	NO. OF PERSONS TO FILL BOXES	TIME CONSUMED IN FILLING BOXES	DRUG BOXES DISTRIBUTED BY
REFILL CONTAINERS					
A	Daily	14	3	3 hours	Orderly
B	Daily	10	1	1 hour	Pharmacy
C	Daily	12	2	3 hours	Pharmacy
E	Daily	12	1	4 hours	Each floor
F	Twice Weekly	None as Such	2	Varies	picks up own
G	Daily	16	4	3 hours	Pharmacy
I	Daily	—	—	—	—
PREPACKAGED STOCK					
D	Daily	Ave. 6 boxes daily Each floor orders on specific days.	4	15—30 min.	Pharmacy
H	Daily	15	1	30 min.	Pharmacy
J	Daily	Courier goes around to 31 nursing units with a cart full of stock and exchanges the empty containers		3 hours	Pharmacy

by THOMAS A. FOSTER

Civilian

Health

REQUIREMENTS



In these days of growing shortages, limitation orders and priorities, the role of the hospital pharmacist becomes more complicated and his responsibility in seeing that the stock of pharmaceuticals is maintained, becomes more difficult. The importance of planning and close cooperation with the staff of the hospital is heightened and is a must.

THOMAS A. FOSTER is pharmacist director, Division of Civilian Health Requirements, Office of Surgeon General, Public Health Service.

Presented at the Seventh Institute on Hospital Pharmacy, New Orleans, La., June 11-15, 1951.



We in the Public Health Service have a real job to do in this period of mobilization and preparation. We are facing up to a possible third world war or, at best, a long period of armed and nerve-wracking readiness—a long drawn-out alert—during which we must get ready for the worst while hoping for the best. The nation's most potent weapon—our great industrial production potential—is being mobilized. As military demand increases, as the defense buildup continues, more and more of our resources will be strained, more and more shortages of critical materials will develop, and more and more controls will have to be applied.

It was inevitable that governmental controls would be necessary to harness and guide our productive power—to conserve our resources. Although the primary object of the defense mobilization program is to see that the military gets what it needs, I can assure you that civilian requirements are not being neglected.

Various governmental agencies have been delegated important portions of the defense mobilization assignment, and the Public Health Service is one of them. We have been assigned responsibility as the representative, or agent, of the civilian health segment of the nation's economy in the mobilization program. It is our job to see to it that civilian health requirements for hospital and health facility construction, and for health supplies and equipment, are not neglected as we build up our defenses.

I would like to emphasize that, historically, the health care of the civilian population in war-time has ranked second only to the military program,

and so it is now—there is no disposition in any quarter to deny that civilian health requires high priority handling.

ORGANIZATION FOR DEFENSE

Before I go further into detail concerning our own responsibilities and functions, I think it would be well if I gave you a bit of background information so that you might better understand the various factors which enter into our operations.

The Defense Production Act of 1950 is the basic law upon which our defense mobilization program is being built; it sets forth the fundamental policies and authorities by which the President is proceeding to develop programs and operations designed to support our foreign policy and military objectives.

Mr. Charles E. Wilson, named by President Truman as director of the Office of Defense Mobilization (ODM), executes the President's authority to "direct, control and coordinate all mobilization activities of the Executive Branch of the Government, including, but not limited to production, procurement, manpower, stabilization, and transport activities."

Top policy organization in the production field, with which the claimant agency program is most concerned, is the Defense Production Administration, known as DPA.

The National Production Authority, in the Department of Commerce, is the operating agency in the production field. Headed by Manly Fleischmann, NPA is responsible, under broad policy direction from DPA, for actual operation of the priority classification and allocation programs which are regulating the production and flow of vital materials.

These special defense agencies, responsible for mobilizing the nation's production have, in turn, delegated certain responsibilities to other departments and agencies. Under one of these delegations the Federal Security Agency was named by DPA as claimant agency in the areas of civilian school and hospital construction, other than veterans hospitals, and the domestic distribution of supplies and equipment in the fields of health, education, welfare and related activities."

A claimant agency's responsibility is broadly defined as the process of estimating, presenting and justifying the resource requirements of a portion of the security economy. To carry out its claimant agency responsibilities, the Federal Security Agency has established an Office of Material Requirements under the direction of Mr. Rufus E. Miles, Assistant Administrator for Defense Activities. This office will be principally concerned with broad policy matters and with the coordination of the required operations, now being carried out by its constituent agencies, including the Public Health Service.

The Public Health Service claimant agency program began operations early last January with a staff of technically qualified personnel

detailed from all three bureaus and the Office of the Surgeon General. Mr. Charles G. Lavin was placed in charge as Program Coordinator; I was assigned to assist him and act as Industry Representative, and we are operating within the frame-work of the Surgeon General's office under the general direction of Mr. Paul A. Caulk, Executive Officer for Administration, Public Health Service. The Division of Civilian Health Requirements, Office of the Surgeon General, as we are now known, has the following function: "To carry out the claimant responsibilities of the Public Health Service with respect to hospital construction and domestic distribution of supplies and equipment needed in the field of health and related activities by the civilian population during the emergency period. It shall also assist in presenting and justifying these needs before agencies responsible for determining allocations of materials and facilities, and in developing and operating programs for the equitable distribution of health materials and facilities allocated to meet needs specified."

In representing the needs of our claimants, including hospitals, health departments, American Red Cross, private practitioners, and medical research laboratories, the Division of Civilian Health Requirements is responsible for providing the Defense Production Administration with the necessary information concerning the requirements of the civilian economy for construction materials and other supplies and equipment essential to the health of the nation. We act as agent for our claimants in verifying, presenting and justifying their claims.

The Defense Production Administration and the National Production Authority rely upon the Public Health Service for recommendations, advice and information upon which to base decisions aimed at balancing production with vital defense needs, channelling those items most needed, or in short supply, to the places where they will do the most good.

Perhaps the most important single activity of the Division of Civilian Health Requirements to date has been the compilation of an extensive report submitted last month to DPA. It estimated the 1951 and 1952 requirements of the civilian economy for hospital construction materials such as iron, copper, steel, aluminum and copper-base alloys; and for certain end products, including some common use items of particular significance to the health field.

The list of end product requirements, in addition to a selected list of pharmaceuticals, ran the gamut from medical and surgical instruments, dressings, sterilizers, dental equipment, X-ray machines, sutures, and microscopes, to such items as laundry machines, ambulances and garbage cans.

As pharmacists, you are concerned primarily with those organizations in Government involved

in the control of the production and distribution of chemicals and pharmaceuticals.

DRUG AND COSMETIC SECTION

The Drug and Cosmetic Section of the Chemicals Bureau is charged with the responsibility of allocating the supply of raw materials and the issuance of any control orders necessary to provide sufficient production and distribution.

The claimant agencies who estimate requirements for pharmaceutical and other health supplies are The Department of Defense for the Military; The Public Health Service for the civilian population; Veterans Administration for their organization; Federal Civil Defense Administration for themselves; Economic Cooperation Administration for their program; Office of International Trade for other foreign programs not covered by the Economic Cooperation Administration; the Atomic Energy Commission; and the Department of Agriculture for any preparations which originate from foodstuffs or preparations which are insecticidal; examples of these are castor oil, glycerin, milk sugar, D.D.T., a few of the most important.

SHORTAGES IN BASIC CHEMICALS

Since the initiation of controls in the present emergency, it became apparent that there would be serious shortages of basic chemicals and starting materials from which so many of our pharmaceutical preparations are made. Within the time allotted me I would like to point out a few which might be of interest to you:

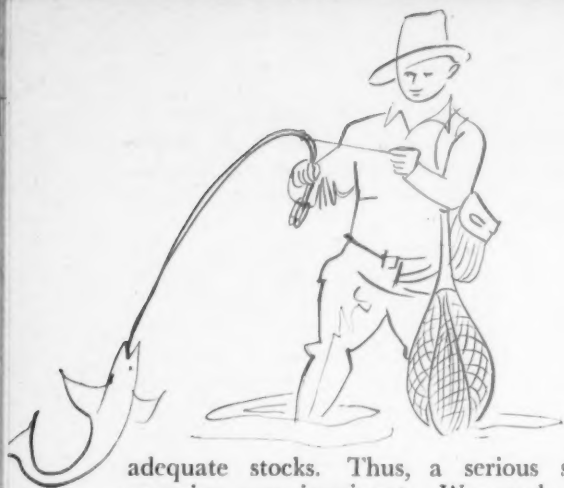
1. As in World War II, shortages developed in the supply of sulfur and sulfuric acid. Uses, both commercial and technical, of these materials are so many and varied that any break in their supply causes serious repercussions in many areas. As you know, the principal uses of sulfur are in the manufacture of sulfuric acid, vulcanizing rubber, the manufacture of sulfites, insecticides and plastics. The uses of sulfuric acid are very numerous, more so, I believe, than any other chemical, the principal applications of which are: manufacture of fertilizers, explosives, dyestuffs, other acids, parchment paper and glue; purification of petroleum; and the picking of metal. Following expansion of military needs for these basics, it was necessary for the National Production Authority to place them under control and allocate the amounts produced. It is also necessary for this country to share the supply of sulfur which is mined here with friendly governments who do not have it available. The sulfur committee of the International Materials Conference representing ten countries is now working out plans for world allocation of sulfur.

2. Another basic which has been in short supply is chlorine. The demand for this chemical is greater than the supply. Like sulfur and sulfuric acid, it is used in the manufacture of so many things that a shortage has a definite effect on the war effort. To name a few, it is one of

the principal components of the manufacture of rubber substitutes, in the purification of water and in the manufacture of D.D.T., of which there is now a shortage due to inadequate supplies of chlorine and sulfuric acid.

3. A chain of shortages with which we have been concerned recently involves the production of procaine hydrochloride. Large quantities of this drug are purchased by the penicillin manufacturers who use it in preparation of procaine penicillin. Upon investigation we found a chain of supply which began with the basic chemical, toluene. Using toluene as a starter, one chemical manufacturer makes *para*-nitro-toluene and *para*-nitro-benzoic acid. Another chemical firm buys the *para*-nitro-benzoic acid and from it makes *para*-nitro benzoyl chloride. This is the only firm in the United States that makes this intermediate for which there is no substitute in the production of procaine hydrochloride. Due to shortages of toluene and its uses in the military effort, the supply of *para*-nitro-benzoic acid was short and the one firm who purchased it to manufacture *para*-nitro-benzoyl chloride was not able to obtain it. As a result, the manufacturers of procaine hydrochloride were unable to keep





adequate stocks. Thus, a serious shortage of procaine was imminent. We made representations to N.P.A. and they were able to issue certain orders which have solved the situation for the time being.

4. Another example of how shortages develop in the chemical and pharmaceutical field is illustrated by the potential shortages of pyridine and quinoline.

As you know, pyridine is obtained from coal tar and is used in the manufacture of niacinamide and some of the sulfas; and during the last war it was critically short. Beginning in 1945, and having in mind this previous shortage, the National Security Resources Board worked with the principal producer of niacinamide and a synthesis of the product was developed with another starting chemical which is paraldehyde. A shortage of paraldehyde has now developed due to the demand for it in the production of D.D.T. which as I mentioned above is also in short supply.

Quinoline is related to pyridine the same way that naphthalene is related to benzene and is used in the manufacture of many pharmaceuticals. The national supply of quinoline is produced principally by one manufacturer, and another manufacturer purchases the quinoline to produce nicotinic acid. Now nicotinic acid or niacin is not used to a great extent in medicine but is used mainly in the fortification of bread. The Public Health Service has been interested in the use of this vitamin in bread for years and at the present time about 25 states have passed a law requiring its use in bread. The manufacturer came to us for assistance and the Public Health Service requested action by N.P.A. to see that quinoline was made available. It developed that the reason for the shortage was that the Quartermaster Corps of the Army was specifying quinoline for use on clothing purchased by them to protect it from mildew. Practically the entire production was being used in this manner. We are still working on the problem with N.P.A. to see that sufficient quinoline is channeled to the manufacturer of niacin.

PHARMACY EQUIPMENT AGENCY

Hospital pharmacists are also concerned with obtaining scarce basic equipment for their pharmacies. Equipment such as sterilizers, stills,

homogenizers, material for parenteral injection, paper cartons and rubber stoppers will be difficult to obtain. As your claimant agency we stand ready to render assistance if and when difficulties are experienced in securing any essential items. Equipment and supplies for hospitals and related activities will be taken care of under the Controlled Materials Plan of CMP. The plan is to take effect July 1st. The CMP will assure supplies of basic metals to essential industries. The controlled industries will submit estimated requirements of basic metals for each quarter to N.P.A. which will screen them and make appropriate allocations. In World War II it was not necessary for producers of chemicals or pharmaceuticals to make application under the CMP and according to present plans it will not be necessary to do so under the new plan after July 1st.

PLANT EXPANSION

The Defense Production Act provides for the expansion of production facilities when the need is directly due to the emergency. This law permits the cost of expansion to be amortized over a period of five years by deduction from taxes.

The Public Health Service, as claimant for the civilian population, has been interested in expansion of production capacity in several areas. The increase in demands of the military and Civilian Defense and for foreign aid has pointed up the fact that the available production is not sufficient. This is particularly true in the field of antibiotics. A majority of the manufacturers of these products have recently received approval for plant expansion which the Public Health Service indorsed. The indorsement was made on the basis of the survey made of the civilian requirements. In view of our claimant responsibilities for the domestic distribution of health and medical supplies we will work very closely with the other Government agencies involved and with industry in keeping production at a level sufficient to supply our ever growing needs.

In addition to the antibiotics, we have recently been able to assist in the expansion of plant facilities in the manufacture of gauze, bandages, burn dressings, ACTH, cortisone, plastic bottle closures, hypodermic needles, syringes, elastic bandages, blood plasma and the blood extendors—dextran and polyvinyl-pyrrolidone (PVP).

YOUR JOB

You, as hospital pharmacists, can be of assistance in meeting the problem of shortages which we face by working closely with the clinical staff; using care and judgment in stocking and dispensing pharmaceuticals, and with the business office in keeping adequate records for intelligent procurement and disbursement. The Public Health Service will exert every effort to do its part in the maintenance of the health and welfare of our civilian population because we feel that it is a vital contribution to the country's efforts in meeting whatever emergencies which may confront us.

NOTES FROM THE PRESCRIPTION LABORATORY
The College of Pharmacy
University of New Mexico, Albuquerque

A physician desired a palatable emulsion of lard for administration to a child. It was directed that as much lard as possible be administered each day, preferably two tablespoonfuls, three or four times daily. The first emulsion prepared contained lard, acacia, and a commercial brand of maple syrup. The preparation was heated before serving over waffles and hot cakes in the same manner as are most breakfast syrups. The development of an unappetizing appearance of the preparation led to further studies on the formulation of lard emulsions. Accordingly, emulsions were prepared with Knox Sparkling Gelatin, grape jelly, pectin and acacia, pectin and gelatin, and pectin and Jello.

LARD EMULSION

The procedure and formula for the preparation which proved to be the most palatable in both taste and appearance are as follows:

Pectin	15.0 Gm.
Jello (strawberry)	85.0 Gm.
Glycerin	15.0 cc
Hot Water	350.00 cc
Coumarin	0.05 Gm.
Vanillin	0.05 Gm.
Sodium Benzoate	0.75 Gm.
Sucrose	100.0 Gm.
Lard	150.0 Gm.

Dissolve the vanillin, coumarin, and sodium benzoate in the hot water. Triturate the pectin and Jello thoroughly with the glycerin, then with the sucrose. Sprinkle the trituration into the hot water and stir until the solution becomes clear. Preheat the glass portion of the Waring Blender with hot water and add the gelatin mixture. Blend until the mixture becomes frothy. Add the lard which has been previously melted on a water bath and blend again. Pour the mixture into an ointment jar and cool in the refrigerator.

The percentage of lard in the finished preparation approximated 20 percent. It is recommended

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that this preparation be dispensed in an ointment jar, that it be stored in a cool place, and that it be prepared fresh every two weeks. This emulsion is most palatable when it is allowed to reach room temperature before administration.

TRIETHANOLAMINE OLEATE IN
EXTEMPORANEOUS COMPOUNDING

Triethanolamine oleate was added to each of the following prescriptions in order to obtain a homogeneous preparation of pleasing appearance:

Liquor Carbonis Detergens	4.0 cc.
Euresol	3.9 cc.
Oil Rosemary	2.0 cc.
Alcohol, 70%	40.0 cc.
Rose Water, to make	120.0 cc

Two cc. of triethanolamine and 5 cc. of oleic acid were added to make a homogeneous preparation. It was dispensed with a shake label.

Beta-naphthol	gr. vi
Sodium Thiosulfate	dr. ss
Carbon Tetrachloride	dr. iii
Alcohol-Water, to make	oz. iv

Forty minims of triethanolamine and 120 minims of oleic acid were added to this preparation and it was dispensed with a shake label.

By the addition of triethanolamine oleate, mixtures of carbon tetrachloride, water, and alcohol, in the proportions given below, may be dispensed without danger of immiscible layers being formed. *Shake* labels should be attached to the finished preparations. The following mixtures were prepared:

	CCL ₄	WATER	ALCOHOL	DESCRIPTION
A	12	20	100	A clear solution
B	12	40	80	Two clear layers
C	12	60	60	Two clear layers
D	12	80	40	Two clear layers
E	12	100	20	Two clear layers
F	12	120	0	Two clear layers

When triethanolamine 3 cc. and oleic acid 10 cc. were added to mixtures B, C, D, E, F, a clear, faintly yellow solution was produced in B, cloudy mixtures in C and D. and white lotions in E and F.

THE AMERICAN INSTITUTE
ON THE HISTORY OF
PHARMACY



COLONIAL WILLIAMSBURG PHOTOGRAPH

A decade ago no one had heard of the American Institute of the History of Pharmacy. Now grown from an idea into a widely known and respected institution, the A.I.H.P. is taking stock of the first ten years of its own history and planning future projects as a reporter-interpreter of pharmacy's development and as a cultural catalyst to the profession.

On May 10 the Institute sponsored a 10th anniversary historical conference on the University of Wisconsin campus. The topic: "Application of Science in the Health Field." Top-notch historians from five different specialties brought the subject into focus from their own angles of vision: chemical industry, medicine, invention,

pharmaco-botany and pharmacy. It was a typical Institute approach, showing pharmacy's contributions and role in a broad historical panorama, and demonstrating once again pharmacy's leadership in assaying the historical roots of the present socio-professional flowering.

There was other evidence that the American Institute of the History of Pharmacy was gaining in significance for the nation's pharmacists. The day before the conference members of the Institute gathered for their 10th business meeting. Here A.I.H.P. Director George Urdang reported on his European sojourn, where he presented an invited paper at the Sixth International Congress for the History of Science in Holland, took a leading part on behalf of American pharmacy in laying the groundwork for an international organization in the history of pharmacy, attended a conference on the social history of medicine in Switzerland, renewed historical contacts, and attended a meeting of the German sister organization of the A.I.H.P., which Dr. Urdang had helped found a quarter century ago.

In the United States, grey but vigorous George Urdang had attended the U.S.P. building dedication and presented an address which a few months ago became a unique A.I.H.P. booklet on "The Development of Pharmacopoeias"—one of a series brought out during the past year.

Even as Urdang spoke, the presses were bringing into reality another long-planned project, a series on the history of pharmacy in neighboring countries of Latin America. English and Spanish editions of the first booklet tell the story of pharmacy in Puerto Rico, an area connected with the United States yet in tradition, landscape and people a part of Latin America.



COLONIAL WILLIAMSBURG PHOTOGRAPH



Dr. George Urdang, director of the Institute and latest recipient of the Leon J. Lascoff Award given by the American College of Apothecaries for outstanding contributions to pharmacy, discusses a historical note with graduate student and former hospital pharmacist, Alex Berman, right.

AMERICAN HISTORICAL SERIES

The 10th anniversary saw also the beginning of a parallel series on the history of pharmacy in each state of the United States. "The Story of California Pharmacy" became the inaugural booklet.

Also on display at the meeting were the first copies of the second edition of the Kremers-Urdang "History of Pharmacy." Although not an Institute publication, the new volume is an extensive revision and enlargement by the A.I.H.P. director of the first edition, which had already passed its tenth birthday. International in scope but with a heavy American emphasis, the book reminded of changes in U.S. pharmacy—including the passing of the book's co-author, Edward Kremers, pioneer in American pharmaceutical education and pharmaceutical history.

It reminded one, too, of the day ten years ago when Kremers, Urdang and a small group of other men gathered in the old pharmacognosy room at the University of Wisconsin School of Pharmacy to found the Institute. In those struggling years a number of men provided the faith and motive power to keep the Institute developing, among them the late E. L. Newcomb and A. J. Horlick, Rufus A. Lyman, B. V. Christensen, Jennings Murphy, Arthur H. Uhl, Louis

Hospital pharmacists who are interested in knowing more about the historical and cultural aspects of their profession are invited to write to the American Institute of the History of Pharmacy, 457 Chemistry Building, Madison 6, Wisconsin. Among publications received by new members of the Institute are the books "Pharmacy's Part in Society," "Goethe and Pharmacy," and "The Story of California Pharmacy." Members receive other publications as they are issued, including the annual mounted reproduction of a pharmaceutico-historical picture. Membership fee is five dollars per year.

W. Busse, Lloyd M. Parks, and Sylvester H. Dretzka. There was also a developing membership among American pharmacists, but it was pharmaceutical industry that provided periodic financial transfusions to keep the Institute growing. Yet, funds were uncertain, and the 10th anniversary treasurer's report showed finances as still the Institute's weakest point. Growing recognition among industrial friends, as well as among pharmacists, gave the anniversary observance a keynote of optimism, however. This was especially evident after the announcement that Dr. George D. Beal of Pittsburgh—representative of a family historically important to pharmacy—accepts the chairmanship of a new sponsoring committee, whose principal task will be to help put the A.I.H.P. on a sounder financial basis.

PURPOSE OF THE INSTITUTE

What is the A.I.H.P. goal? Preparing for the 10th anniversary observed last month in Madison, Dr. Urdang pointed to his traditional statement of principle: "The aim of the American Institute of the History of Pharmacy is to equip the pharmacist for citizenship in the world of intellectual and moral responsibility by making him familiar with the nontechnical aspects and humanistic ramifications of the profession, and to do pharmacy's share in the cooperative endeavor for making the historical record of world civilization as complete as possible."

As progress toward this goal, the Institute could point to a long list of "firsts" in the publication field during its first decade; to exhibits arranged and public addresses given, to official historical work for the American Association of Colleges

of Pharmacy and cooperation in the historical field with other pharmaceutical organizations; to consulting and advisory services to publications in related fields (historical publications of science, chemistry and medicine).

While the A.I.H.P. is administered by a nationally representative council and panel of officers, the historical program has been developed and carried out by the executive director, Dr. George Urdang, generally recognized as one of the world's most distinguished authorities on the history of pharmacy. He is the 1951 recipient of the Lascoff Award and holder of many honorary positions and memberships. Since 1948 Dr. Urdang has been assisted by Glenn Sonnedecker, former editor of the *Practical Pharmacy Edition* of the *Journal of the A.Ph.A.*, who is completing work under Dr. Urdang for a doctorate.

Such academic work is made possible by a full professorship in the history of pharmacy, established in 1947 at the University of Wisconsin School of Pharmacy where the working office of the Institute is located. This permits a fruitful symbiotic relationship between the Institute and the University of Wisconsin, where there are unusual library facilities in the history of pharmacy, where there is a unique history of science group of professors representing various fields, and where the late Edward Kremers laid the foundation of a center for scholarly work in the history of pharmacy—an interest continued by the present dean, Dr. Arthur H. Uhl.

MEMBERSHIP INVITED

One of the immediate goals set for the A.I.H.P. by Dr. Urdang on its tenth birthday is the broadening of its base of membership. "We are grateful to those pharmacists," he said, "whose dues have helped bring the A.I.H.P. through these formative years. I look forward to the day when every American pharmacist interested in the social and cultural aspects of his profession will join with us. I would like to add," he continued, "that every new member is sent all publications of the Institute currently in print, he receives other publications as they are issued, and at Christmas time receives the annual mounted reproduction of a pharmaceutico-historical picture."

Confirmation of the Institute's role in American pharmacy came from Dr. Henry E. Sigerist, the greatest living historian of medicine, who commented: "It seems to me that an Institute of the History of Pharmacy has today a particularly important function to fulfill. It not only helps us to obtain a more complete picture of the history of civilization but can also greatly contribute to maintaining the dignity of a profession that is threatened by various forces. In this as in other fields the historical analysis paves the way that leads into the future."

by FRANK J. STEELE

▶ GREENWICH

the new

pharmacy department at

GREENWICH

greenwich hospital association

greenwich, connecticut

From a dark basement room, reminiscent of the medicine cabinet era, the Pharmacy Department at Greenwich Hospital Association, Greenwich, Connecticut, has suddenly blossomed out into a well-lighted modern suite of six units, more than

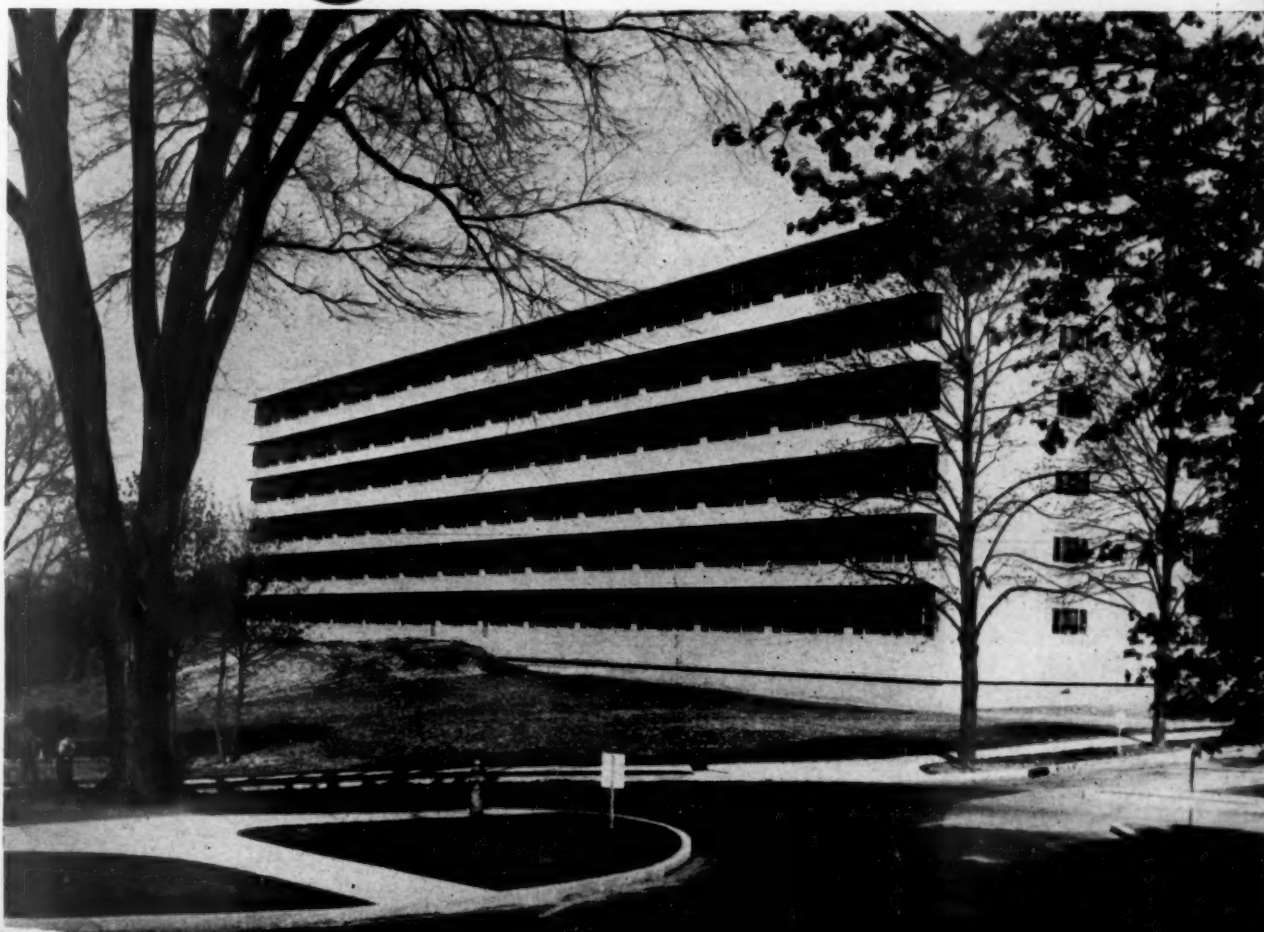
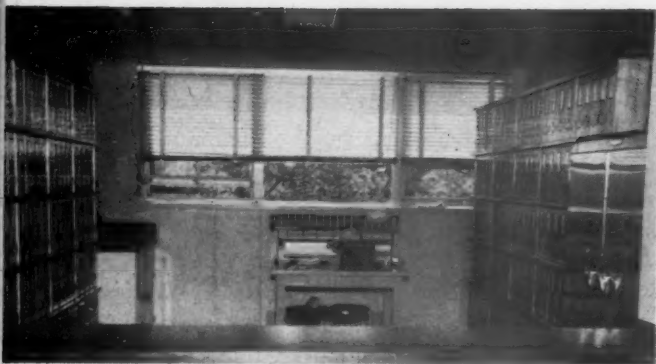


PHOTO COURTESY THE GREENWICH TIME



Looking over the dispensing counter in the new Greenwich Hospital Pharmacy Suite, one sees here the Schwartz cabinets on either side, and the refrigerator for biologicals on the left. Note ample window space.

View of one side of the sterile solution room shows door of steam sterilizer, along with water still, and other equipment.



meeting the standards of the United States Public Health Service and the American Society of Hospital Pharmacists as to space, design and facilities.

The reason for the metamorphosis is the construction and recent opening of the new Greenwich Hospital. In its careful planning all professional personnel actively participated. No preconceptions, dating from the era before terms like chemotherapy entered the popular vocabulary, were permitted to interfere with the realization of an up-to-date Pharmacy Department with space to carry out its proper functions, new and old, and all the essential equipment for servicing community needs, both in the nursing units and the outpatient clinics.

Like other department heads, when the facilities they were to use were under consideration, the pharmacist sat in on numerous planning confer-

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ences with the administrator, Mr. William J. Donnelly, the Building Committee of the hospital's Board of Directors, and with the architects, Skidmore, Owings & Merrill, of New York, who designed the \$4,750,000 hospital building and reconstruction project.

The Pharmacy occupies space on the ground floor of the new T-shaped building. Its stem forms a service wing, connecting with clinics in the old building. The Pharmacy is strategically located near this link-up, so that it has convenient access both to the elevators serving the patients' floor and the Outpatient Department.

It is located entirely above ground with a western exposure. As approximately a third of the wall consists of glass, the afternoon sun floods the suite with natural light that would dazzle the eyes of many a hospital pharmacist who has become inured to a mole-like existence. Flooring throughout is of asphalt tile, and there is overhead fluorescent lighting.

DISPENSING PHARMACY

The side walls of this room are lined with Schwartz sectional cabinets with 192 drawers and compartments. Other equipment includes a McCall refrigerator for biologicals, with ten drawers and four shelves and a sink equipped with working counter, gas electricity and hot and cold water. Requisitions and prescriptions are handled at a counter with six shelves underneath and a steel door which rolls down and may be locked at night. The center prescription counter had not arrived at the time the picture was taken. For administrative and technical control, only pharmacy personnel pass beyond the counter. The dimensions of this room are 14 by 20 feet.

PHARMACIST'S OFFICE

The office and library is on the first room of the corridor which leads from the Dispensing Pharmacy to the remainder of the suite. Here the pharmacist has his desk, files, formula cards, and space for conferences with staff or students. Shelves and drawers set into the corridor wall hold reference books, periodicals, and price lists. The dimensions of this area are 9 by 14 feet.

STERILE SOLUTION ROOM

This room has been included so that the hospital may manufacture its own sterile solutions. A nickel-clad sterilizer, measuring 24 x 36 x 48 inches, with monel metal carriage, is built into the wall. In addition, there is a hot air sterilizer 24 x 36

inches; for various compounds and powders. Work benches are equipped with vacuum, pressure, gas and electricity. Other equipment includes a water still with a capacity of ten gallons per hour, and a purity testing meter, along with all types of filters, flasks, etc. Later to be added is a Fenwal high-speed, semi-automatic measuring, mixing and filtering unit with standard sets of measuring chamber and four-way shut-off valve. This room is 15 by 20 feet.

TESTING LABORATORY

Farther down the corridor, with its wall safe, oil and ointment cold closet, one enters a large room. The alcove to one side of the back of the steam sterilizer is assigned for testing and control. It is equipped with gas, vacuum, electricity, and pressure. The dimensions of the testing area are 6 by 6 feet.

MANUFACTURING PHARMACY

The remainder of the large room serves as a Manufacturing Pharmacy. There is a double working counter, besides a single counter, equipped with electric hot plate, electricity, sinks, cold and hot water. Among the items we plan to make here are various capsules, lotions, washes, ointments, solutions, and other types of preparations, including vitamin capsules.

STORAGE ROOM

This is also a large room, with open and closed shelving space and room for barrels and other forms of bulk storage. Its dimensions are 20 by 20 feet.

VAULT FOR INFLAMMABLE SUBSTANCES

Because of the fire hazard, ether, alcohol and other inflammable substances, beyond the supply required for current use, are stored in a vault built into a retaining wall outside the hospital building.

The total floor area of this Pharmacy Department, not including the outside vault, is 1,800 square feet. In space and equipment, it is planned, like other ancillary facilities in the new hospital, to be adequate to serve a hospital with an eventual capacity of as many as 400 beds. Though the new Greenwich Hospital opened as a 211-bed hospital, it is believed that the needs of growing and increasingly hospital-conscious community will eventually make necessary a much larger bed capacity. For this reason, the building committee considered it prudent to design the plan so that when more patients are served, beds may be added merely by completing an unfinished floor and, later, by extending the wings for patients.

The Laboratories, the Radiology Department, the Operating Suite, Purchases and Stores, the Kitchen and, last but not least, the Pharmacy, will already be large enough.

The phrase, "last but not least," is used advisedly. Here is a Pharmacy to which just as much attention was given in the planning stage

as to other departments in the hospital. We like to believe this is a happy omen and a harbinger of the shape of things to come.

INTERNSHIP PROGRAM

Just after moving into our new quarters, we were able to announce a program of graduate study and internship in hospital pharmacy in cooperation with Columbia University College of Pharmacy.

Applicants for an academic internship in hospital pharmacy must possess the degree of Bachelor of Science in Pharmacy with grades acceptable to the college, etc. The period of combined instruction, courses and internship is approximately two years. Upon satisfactory completion of the courses of study, students will be awarded the degree of Master of Science in Pharmacy and a certificate of internship certifying the bearer as competent to assume charge of a hospital pharmacy.

The student attends lectures, conferences, talks, and courses at the college and receives practical instruction at the hospital in manufacturing, dispensing, administrative duties, controls, sterilization procedures, etc. He is required to meet the requirements of the College of Pharmacy and the standards set up by the American Society of Hospital Pharmacists.

Under this plan, a twelve-month internship is served under the supervision of the chief pharmacist of the Greenwich Hospital, who has responsibilities for the practical instruction in various divisions of hospital pharmacy. Candidates wishing to make application or receive additional information may correspond with Dr. E. E. Leuallen, professor of Pharmacy, Columbia University, College of Pharmacy, 113-119 West 68th Street, New York 23, New York.

Thanks to the facilities of the new Greenwich Hospital, pharmacy takes its place in the educational program of the hospital, along with programs for helping young doctors, nurses, dietitians, and hospital administrators to prepare for their professions.

When the last demijohn was trundled from our dusty cluttered closet of Second World War vintage and we took up our abode in gleaming, commodious and sunlit quarters in the new Greenwich Hospital, we flung out our arms in joy—and didn't knock a single flask off a shelf.

"This is the hospital pharmacy of tomorrow," we exclaimed.

THE 1951 INSTITUTES ON HOSPITAL PHARMACY

The American Pharmaceutical Association and the American Society of Hospital Pharmacists again cooperated in sponsoring two Institutes on Hospital Pharmacy—the American Hospital Association Institute in New Orleans and the Catholic Hospital Association Institute in Philadelphia.

Approximately 200 hospital pharmacists representing almost every state, Canada and Puerto Rico attended these two meetings. This type of refresher course, which is designed especially for hospital pharmacists, was first inaugurated in 1946 and has now become an important phase of education to pharmacists in hospital practice throughout the nation. Not only do they mean a great deal to the individuals attending, but such meetings also provide a real service to the nation's hospitals in providing better pharmaceutical service. Furthermore, many of those attending return to their local hospital groups and fellow pharmacists with a wealth of information. Publication of papers presented at these meetings also adds to the value of courses of this type. The enthusiasm and interest at both institutes exemplified the spirit of hospital pharmacists in their efforts to improve the practice of pharmacy in hospitals. Much credit is due to outstanding contributions by faculty members coming from all parts of the nation and representing the various aspects of hospital pharmacy practice.

Of the 106 hospital pharmacists attending the five-day session at Hotel Roosevelt in New Orleans, 69 were men and 35 women. Of the 88 representing hospitals, pharmacists present



were from institutions of all sizes and types—general, church, special, nonprofit and government. Distribution by bed capacity was as follows:

<i>Beds</i>	<i>No. Present at Institute</i>
1-100	8
101-200	16
201-300	19
301-400	10
401-500	10
501-1000	15
1001 and over	10

NEW ORLEANS

American Hospital Association - 7th Institute

IN COOPERATION WITH THE A P H A AND A S H P

Following greetings from the sponsoring organizations, the Seventh Institute on Hospital Pharmacy was officially opened on Monday, June 11, with a series of talks on principles of organization and administration. Speaking on "Basic Principles of Organization," Father Shields, president of Loyola University, urged hospital pharmacists to have a sound plan of organization in order to enable all parts to function effectively. Covering "Basic Principles of Administration and Organization of a Hospital," Mr. Frank Groner, administrator of Baptist Hospital in Memphis, suggested that hospital pharmacists have a great opportunity to establish good staff relations. On discussing "Basic Policies of Departmental Relationship," Mr. C. J. Hinsley, assistant administrator of Touro Infirmary in New Orleans, urged hospital pharmacists to adopt the policy of "service to the patient with greatest consideration for the financial picture." Policies were defined as "definite principles which serve as governing rules in attaining our objectives."

From basic principles to the formulation of policy in operating the various activities in the pharmacy department, policies covering manufacturing, the pharmacy and therapeutics committee, pricing, purchasing and departmental relationships were discussed. In line with this, Mr. Walter Frazier, chief pharmacist at Springfield City Hospital, Springfield, Ohio, covered pharmacy management with suggestions for integrating the functions of the pharmacy with routine of other departments.

Records of the pharmacy department were covered by C. J. Vance, chief pharmacist and assistant director of South Highlands Infirmary

Those attending the Philadelphia Institute represented chiefly Catholic hospitals with a few lay pharmacists. The Sister pharmacists showed real interest in the current problems facing hospitals. Their need and enthusiasm for meetings of this type, and their devotion to duty in providing the best pharmaceutical service possible in their hospitals was apparent during the discussion periods. Resolutions passed during a business session for Sister Hospital Pharmacists will serve as a guide to future activities as well as a key to the progress of this group.

in Birmingham, Ala., and by George Archambault, senior pharmacist, Public Health Service, Washington, D. C. Specific examples of the various records which were presented include pharmacy operations, daily pharmacy worksheet, pharmacy manufacturing worksheet, narcotic and barbiturate records and purchasing.

A full day was devoted to current trends in therapy by outstanding physicians from the New Orleans Area. Discussions covered electrolytic ion replacement therapy, drugs used in the treatment of tuberculosis, developments in the treatment of parasitic diseases, endocrine drugs, preparations used in the treatment of epilepsy and newer autonomic drugs. A general presentation by Dr. Robert Driver, associate professor of Pharmacology of the Medical College at the University of Alabama, offered a great deal of information on current investigational drugs. Dr. Driver gave highlights of the work being done on each drug, results to date, and when possible, where the investigational work is being carried out.

In a talk by Thomas Foster, pharmacist director, Division of Civilian Health Requirements, Office of the Surgeon General, Public Health Service, institute enrollees were brought up to date on the organization and functions of the Division of Civilian Health Requirements in providing materials needed in hospital construction and domestic distribution of supplies and equipment in the health field. Giving specific examples of areas where shortages may occur, Mr. Foster pointed out the role which hospital pharmacists might take to be of assistance in meeting the current problem of shortages.

Other features of the five-day session which

offered time for relaxation and informal discussions included a visit to La Pharmacie Françoise De Louis Dufilho, a dinner meeting at the famous restaurant, Arnaud's, with an evening of entertainment in the New Orleans fashion and a special luncheon on Friday with Dr. R. L. Pullen, vice dean of the School of Medicine, Tulane University, speaking on "The Changing Concepts of Medical Practice." Concluding the meeting was the final dinner on Friday night and awarding

of certificates by Dr. John C. MacKenzie, director of Touro Infirmary, New Orleans.

The Louisiana Society of Hospital Pharmacists with its president, Miss Valerie Armbruster, serving as chairman of the local committee, contributed much toward the success of the Institute. Their "Southern Hospitality" along with individual efforts on the part of many, offered every opportunity to spend a profitable and enjoyable week.

PHILADELPHIA

Catholic Hospital Association - 3rd Institute

IN COOPERATION WITH THE APHA AND ASHP

Meeting in conjunction with the 36th annual convention of the Catholic Hospital Association, approximately 70 pharmacists attended the third Institute conducted under the auspices of the CHA and held at Convention Hall in Philadelphia, May 31 to June 4. The program arranged by the CHA's Committee on Hospital Pharmacy Practice, offered a wealth of information for providing members of the Institute with up-to-date information in new trends in therapy, new formulas, manufacturing procedures and methods for handling records and reports in the hospital pharmacy. Members of the Committee responsible for planning the program were: Sister Mary Bernardine, S.C. *Chairman*, Holy Family Hospital, Brooklyn, N. Y.; Sister Mary Berenice, S.S.M. St. Mary's Hospital, St. Louis, Mo.; Sister Mary Blanche, O.S.F., Sacred Heart Sanitarium, Milwaukee, Wis.; Sister Mary Carl, O.P., St. Dominic Hospital, Jackson, Miss.; and Sister Mary Ancilla, S.S.J., St. Joseph's Hospital, Hamilton, Ontario, Canada. Among others who assisted the committee in making arrangements for this meeting were Mr. M. R. Kneifl, executive secretary of the CHA; Mr. Oliver Steppig, Alexian Brothers' Hospital, St. Louis; and Mr. Herbert L. Flack, Jefferson Medical College Hospital, Philadelphia.

With Mr. Steppig as presiding officer, the first meeting was opened with an invocation by the Rev. John J. Flanagan, S.J., executive director of the Catholic Hospital Association. Among the distinguished guests present for the meeting were Mr. R. Kneifl; Dr. Robert P. Fischelis, secretary of the A.Ph.A.; I Thomas Reamer, president of the ASHP; Mr. Quintus Hoch, president of the Philadelphia Hospital Pharmacists Association; Dean J. Sprowls, Temple University College of Pharmacy; and Dean L. F. Tice, Philadelphia College of Pharmacy. In bringing

greetings from the A.Ph.A., Dr. Fischelis touched briefly on the objectives set forth by the second Institute held last year, namely, a workable, acceptable set of minimum standards which can be applied to all types of hospitals without necessarily casting them into a single mold. Mr. Reamer expressed appreciation for the work the Sisters have done to promote the welfare of the hospital pharmacy, giving particular recognition to those Sisters who have been active or are now active on the various committees. Sister M. Ludmilla of Firmin Desloge Hospital, St. Louis, was given recognition as having served as the first treasurer of the ASHP.

One of the highlights of the program was a talk on "Trends in Therapeutics" by Dr. Paul Wermer of the Council on Pharmacy and Chemistry of the American Medical Association. He brought to the pharmacists' attention new drugs which are presently on clinical trial, including the digitalis alkaloids, methionine, inositol, quarternary bromides, B.C.G. vaccine, radioactive iodine, P.A.S., influenza vaccine A and B, and the newer antibiotics.

Devoting a session to the legal aspects of pharmacy practice in hospitals, discussions were presented on the "Application of Narcotic Regulations to Hospital Pharmacy" by Mr. Joseph M. Bransky, U.S. Narcotic Bureau, Philadelphia, and Dr. John H. Remig, medical examiner, Division of Narcotic Drug Control, State of Pennsylvania; and "Status of Pharmacy Practice Acts" by Mr. Sylvester H. Dretzka, Wisconsin State Board of Pharmacy, Milwaukee. Mr. Dretzka encouraged hospital pharmacists to form close contacts with their respective State Boards since they have much to offer the profession of pharmacy. The panel on narcotic regulations touched upon practically all possible problems in regard to carrying out narcotic regulations.

Included also on the Thursday afternoon session was a skit presented by the New York Sister Pharmacists. It illustrated the advisability of appointments for interviewing detail men.

Friday morning was devoted to problems and suggestions for manufacturing in the hospital pharmacy under the direction of Mr. Herbert Flack, along with the able assistance from his intern staff at Jefferson Medical College Hospital. A well rounded program was presented covering: Manufacturing as a Factor in Reducing Cost of Pharmacy Service; Manufacturing of Sterile and Non-Sterile Products.

A tour of Philadelphia hospitals offered an opportunity to see what is being done in other institutions as well as practical suggestions for carrying out new procedures.

Following Pontifical Mass on Saturday morning, a panel on "Minimum Standards for Hospital Pharmacy Service" was held with Sister M. Bernardine as moderator. Other members of the panel included Sister M. Alexius, R.S.M., St. John's Hospital, St. Louis; Sister Marian, St. Elizabeth's Hospital, Elizabeth, N. J.; and Mr. Robert Bogash, Memorial Hospital, Wilmington, Del. Sister M. Alexius covered "Fields of Education and Administration," pointing out the necessity for evaluating our professional service and consequent organization of our department as well as establishing a functioning therapeutics committee. Mr. Robert Bogash confined his talk to the importance of the hospital formulary as recommended in the *Minimum Standard for Pharmacies in Hospitals*.

Continuing the theme of the Minimum Standards, Sister Marian developed the subject of the practicality of training religious as pharmacists by those orders which maintain and staff Catholic hospitals, enumerating the advantages and encouraging hospital pharmacists to establish internship programs.

Concluding the Saturday program, W. Paul Briggs, director of the American Foundation for Pharmaceutical Education, outlined the advances in educational standards in our profession, commenting on the requirements for training for pharmacists today as compared with those of five or ten years ago. He emphasized the need for this additional training due to the advances in therapeutics and a more intensive scientific and all-round development of professional education.

A demonstration of prescription pricing was presented at the opening meeting on Sunday by Mr. E. J. Carroll of Sharp and Dohme. He discussed the increasing cost of drugs, pointing out the fact that it is frequently overlooked that

treatment with drugs is expanding likewise and if the situation is evaluated correctly, drug costs must also increase. He further commented on the fact that time, the most expensive ingredient of a prescription, is undervalued by the pharmacist himself. Hospital pharmacists were encouraged to come closer to retail pricing schedules.

Of practical interest to those attending the Institute was a discussion by Dr. Edward Ireland of Loyola University, New Orleans, showing how a well indexed literature and information system could simplify the work and professional skills of the hospital pharmacists.

Mr. Martin Ulan, assistant administrator of Hackensack Hospital, Hackensack, N. J., presented a revealing financial picture of hospital pharmacy as viewed from the point of view of the administration office.

A session devoted to "Professional Ethics for the Hospital Pharmacist" was led by Rev. H. B. Crimmins, S.J., regent, Creighton University College of Pharmacy. Other participants were Dr. Wm. A. Jarrett, Dean of Creighton University College of Pharmacy and Dr. Joseph Toland, Philadelphia. Subjects covered included "Ethical Problems in Hospital Pharmacy Practice;" "Responsibility for Approved Products;" and "Relationships of Pharmacists."

In a talk on "Practical Spirituality for Pharmacists" the Rev. John B. Fee, assistant rector, St. James Church, Philadelphia, urged integration spirituality with our profession.

During the Monday session, Mr. Edwin F. Voight of Lederle Laboratories, outlined recent advances in antibiotics giving the indications and use of penicillin, Aureomycin, Chloromycetin, tyrothricin, bacitracin, polymyxin, neomycin and the enzymes, streptokinase and streptodornase.

Mr. Leonard J. Piccoli of Fordham University College of Pharmacy explained the role of the pharmacist in "Civil Defense and Medical preparedness." Supplemented with a film and slides, emphasis was placed on the important supportive part hospital pharmacists will be expected to play should atomic warfare be used.

With Mr. M. R. Kneifl acting as toastmaster at the final luncheon on Monday, Msgr. John R. Mulroy, president of the CHA, awarded certificates to the pharmacists attending the institute.

RESOLUTIONS ADOPTED

The Third Institute for Hospital Pharmacists held under the auspices of the Catholic Hospital Association adopted the following resolutions.

THE SELF-STUDY PROJECT

Resolved that this Third Annual Institute express its gratification over the results thus far realized in "The Self-Study Project" relating to the application of the

Minimum Standards for the Hospital Pharmacy in Catholic Hospitals. This Institute recommends that the report of this study be developed without delay and be made available to hospital pharmacists as early as possible. This Institute further recommends that a tentative or preliminary draft of a pharmacy point rating plan be developed for general use as part of the report of "The Self-Study."

Be It Further Resolved, That this Third Annual Institute urge the directors of all hospital pharmacies to devote some time to the study of the application of the *Minimum Standard for Pharmacies in Hospitals* to their pharmacies. That standards for the hospital pharmacies will be enforced seems to be inevitable. It is therefore strongly recommended that every effort be made now to anticipate this professional requirement from which should result the early professional recognition of the scientific character of the hospital pharmacy.

DEPARTMENTAL POLICIES

Be It Further Resolved, that the representatives of hospital pharmacies participating in this Third Annual Institute commit themselves for the year 1951-52 to the study of departmental policies for their pharmacies. Such a study should result in a better understanding of the objective of the individual pharmacy, of its professional program of service and of its administrative efficiency. This Institute recommends, without hesitation, the early formulation of pharmacy policies and the drafting of regulations consonant with the written statement of policies and objectives.

REGISTRATION OF HOSPITAL PHARMACIES

Be It Resolved that the Catholic Hospital Association at its Third Institute for Hospital Pharmacists go on record favoring the registration of hospital pharmacies with the respective State and Provincial Boards of Pharmacy as other pharmacies in these jurisdictions are required to be registered. The attainment of this

measure of government recognition will redound to the benefit of the hospital and will officially establish a level of professional excellence not now enjoyed by the hospital pharmacy.

COPYING PRESCRIPTIONS

Be It Further Resolved, that this Third Annual Institute record its conviction that the practice in some hospitals of copying certain orders for medication from the medical record by the nursing personnel and presented to the pharmacist be discontinued because of the many dangers to the welfare of the patient inherent in such practices. It is strongly recommended that the physician or the intern write a prescription for medications which are not stocked on the nursing divisions, since the prescription serves as the physician's authorization to the pharmacist to prepare medication for the patient.

ADVERTISING POLICY

Be It Further Resolved, that the students of this Third Institute for Hospital Pharmacists conducted by The Catholic Hospital Association express their gratitude to the officials of the American Society of Hospital Pharmacists for their understanding approach to the problems of advertising in the Society's Journal which involve principles of the Natural Law. While assurances have been given that the viewpoints of these students, staff members of Catholic hospitals in the United States and Canada, will be respected, it is again strongly recommended that the officers of the American Society of Hospital Pharmacists formulate the Society's advertising policy based on the principles of the Natural Law; it is further recommended for the guidance of the members that this policy be spread on the records of the Society's proceedings.

In addition to the foregoing resolutions, resolutions of thanks were adopted to those who made special contributions to the success of the Institute.

FOSTER PROMOTED TO PHARMACIST DIRECTOR, U. S. P.H.S.

Dr. Leonard A. Scheele, surgeon general of the Public Health Service, Federal Security Agency, recently announced the promotion of senior pharmacist Thomas A. Foster to the grade of Pharmacist Director (equivalent to grades of Captain, U. S. Navy; Colonel, U. S. Army).

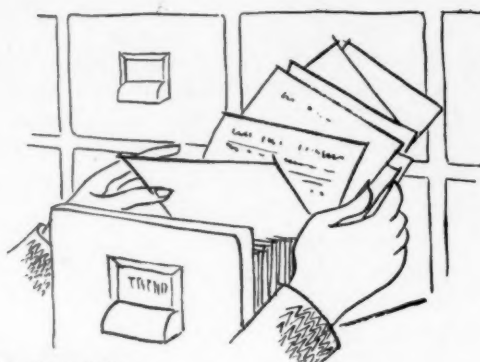
A career pharmacist in the Regular Corps of the Public Health Service, Mr. Foster entered the Service as a hospital pharmacist at Mobile, Alabama, in 1933. For several years he served as administrative officer for the Washington, D. C., Outpatient Clinic and the Baltimore, Maryland, Marine Hospital. In recent years, he has served as chief of the Division of Purchase and Supply in the Office of the Surgeon General and as special assistant to the chief of the Bureau of Medical Services.

Mr. Foster is currently active in the recently created emergency Claimant Agency Office, in which he is serving as industrial representative to the health industries of the country.

CATALINE BECOMES DEAN AT NEW MEXICO

Dr. Elmon L. Cataline, associate professor of Pharmacy at the University of Michigan College of Pharmacy has accepted the deanship at the New Mexico College of Pharmacy at Albuquerque beginning September 1. Dr. Cataline received his Ph. D. at the University of Michigan in 1938 and was assistant professor at the Toledo College of Pharmacy until 1940, at which time he became a member of the faculty at Michigan where he has remained until the present time.

An active participant in pharmacy affairs in Michigan, Dr. Cataline is a member of the Board of Directors of the Michigan Academy of Pharmacy, past president and member of the Executive Committee of the Michigan Branch of the A.Ph.A. Dr. Cataline is a section editor of *Chemical Abstracts* and is chairman of the Committee on Predictive and Achievement Tests of the American Association of Colleges of Pharmacy. He is a member of Rho Chi, Phi Lamda Upsilon, Sigma Xi, Phi Kappa Phi and is a past master of the Masonic Blue Lodge.



THERAPEUTIC TRENDS

New trends in medicine and pharmacy include

I M QUINIDINE — NEW MYDRIATIC — MERCURIAL
DIURETIC — ETHIONINE — ANTICHOLINESTERASE
DRUG — COPARAFFINATE — ATROPINE-LIKE DRUG

I M Quinidine

Use of propylene glycol as a vehicle for 20 percent quinidine sulfate has been shown to be satisfactory in a preparation for treating disorders of cardiac rhythm with negligible local reactions. Such a preparation meets an important need in quinidine therapy. It is especially applicable to certain kinds of cases—those in which the oral administration gives rise to diarrhea or other gastrointestinal symptoms; patients in coma; and for the prevention and treatment of disorders of heart rhythm during surgery and anesthesia.

The studies reported in the *J. Am. Med. Assoc.* 145:637 (Mar. 3) 1951, give the results of using 20 percent quinidine sulfate in propylene glycol on 19 patients. On intramuscular injection, either no pain or pain of varying intensity, but almost invariably of very short duration, resulted.

New Mydriatic

A new mydriatic and cycloplegic drug known as Compound 75 G.T. is believed to more closely approximate the ideal standards for this type drug than any other in present day use. Results of the preliminary investigations published in the *Am. J. Ophthalmology* 34:572 (April 1951), may indicate that Compound 75 G.T. can displace homatropine, and possibly atropine, in the practice of refraction. This compound is a member of a new series of spasmolytic agents belonging chemically to the class of basic esters of substituted phenyl acetic acids.

Since Compound G.T. has both mydriatic and cycloplegic properties, the clinical study was divided into two phases. The mydriatic effects were studied on a group of approximately 100 hospitalized patients without delayed or untoward effects even though a miotic was deliberately withheld. Comparison studies were made with Paredrine (1.0 percent), homatropine (2.0 percent) and Neosynephrin (10 percent). Recovery from the mydriatic effect of Compound 75 G.T. generally occurred spontaneously in 20 hours or less without the use of a miotic and more promptly if pilocarpine (1.0 percent) was instilled after maximum mydriasis was obtained.

As a cycloplegic, Compound 75 G. T. was

found more effective than homatropine and less persistent when used on more than 50 patients. Maximum cyclopegia generally approximated maximum mydriasis as did recovery therefrom.

This preparation, supplied by Schieffelin and Company, New York, was used in a concentration of 0.5 percent in a boric acid-borate buffer of approximately pH 5.7 with 1:50,000 Zephiran added as a preservative. No irritation or untoward general reactions were observed.

Mercurial Diuretic

An analog of Mersalyl combined with theophylline may prove effective and safe as a diuretic. Known as Compound 08879, chemically, it is the sodium salt of *ortho*-(N-gamma-hydroxymercuri-beta-hydroxyethoxy-propyl carbamyl)-phenoxyacetic acid. Pharmacological studies were carried out at the Eli Lilly Research Laboratories and a report appears in the *J. Am. Pharm. Assoc., Sci. Ed.* 40:249 (May) 1951.

Although this compound may offer certain advantages over other mercurial diuretics, the potential dangers of mercurials will still be present. It may cause injuries to the kidney from prolonged administrations of large doses and temporary fall in blood pressure. Abnormal changes in the electrocardiogram may, also occur after intravenous injection of large doses of 08879. In a combination with theophylline in the ratio of 2:1, compound 08879 was compared with Mersalyl. It was found to have about the same diuretic potency, but a lower acute toxicity in mice and rats by intravenous and intramuscular injections.

Ethionine

Ethionine, an analog of the amino acid, methionine, has been reported to be effective in preventing the growth of a strain of polio virus *in vitro*. Although reported to be too strong for use in the human body, the authors indicate that it opens the way for further experiments in finding a safe drug to use against the polio virus. These first studies are being carried out at the University of Michigan and were reported at the recent

meeting of the Federation of American Societies for Experimental Biology.

Anticholinesterase Agent

Clinical trials using octamethyl pyrophosphoramidate in the treatment of myasthenia gravis indicate that this new anticholinesterase agent may replace Neostigmine in some cases. It is a stable and a relatively nontoxic agent having certain advantages over other cholinergic phosphates—diisopropyl fluorophosphate, hexethyl tetraphosphate and tetraethyl pyrophosphate—as well as Neostigmine. According to the study appearing in the *J. Am. Med. Assoc.* 145:967 (Mar. 31) 1951, two oral doses of from 9.5 to 18 mg. a day resulted in evenly maintained strength which is generally greater than the maximal strength with Neostigmine.

Six cases were treated with octamethyl pyrophosphoramidate, four of which were successful. Doses taken at twelve hour intervals resulted in evenly maintained strength throughout the day and night. No distinct peaks of maximum strength after single doses were apparent. In three of the patients treated, it was also true that muscular strength on the new compound was clearly better than that on Neostigmine at the peak of its action; in one case strength on octamethyl pyrophosphoramidate was at least equal to that at the height of Neostigmine effect.

Atropine-Like Drug

A synthetic compound showing marked atropine-like action has been tested in a variety of ophthalmic conditions on experimental animals and man. When used for the same wide range of pathologic conditions for which one employs atropine, scopolamine, or homatropine, this compound, known as BL 139, showed comparable results. It is one of a series of diphenyl substituted basic amides having the chemical formula, α , α -diphenyl- γ dimethyl-aminovallamide. BL 139 was synthesized and supplied by Bristol Laboratories and the clinical studies are reported in the *Am. J. Ophthalmology* 34:847 (June) 1951.

With a majority of patients using a 2.0 percent ointment, three times daily, for one to four weeks, no sensitization to BL 139 occurred in any of the 120 eyes medicated. Of 12 patients treated who were definitely sensitive to atropine, none showed untoward response to the compound and all benefited from its use. It therefore seems that the most promising use of the new drug as a mydriatic and cycloplegic is in patients sensitive to the belladonna alkaloids.

A 0.5 percent solution of BL 139 produced

cycloplegia comparable with that due to 5.0 percent homatropine solution. A 2.0 percent BL 139 ointment was found equivalent to 1.0 percent atropine ointment both for refraction and for therapeutic use. Preoperative use of a 1.0 percent solution of BL 139, when combined with the use of 10 percent Neosynephrine, resulted in sustained maximal dilatation of the pupil. Pilocarpine and eserine were found ineffective when used following BL 139 administration. Also, primary glaucoma was precipitated or aggravated by use of this drug.

Coal Tar and Antihistamine

Combination of five percent coal tar extract and two percent of an antihistamine (pyranisamine maleate) in a hydrophilic ointment base appears to have a synergistic action. The combination, known as histar, seemed more effective than use of tar alone. Good results were produced when treating dermatoses in 71 percent of the cases, and in pruritus in 75 percent of the cases. A total of 52 patients were treated of which none developed sensitivity to the compound. A summary of the clinical study is reported in *United States Armed Forces Medical Journal* 2:187 (Feb.) 1951.

Coparaffinate (Iso-Par)

Coparaffinate is a recently developed chemotherapeutic agent originally used in the treatment of epidermophytosis. It is available in ointment form in a preparation known as Iso-Par from Medical Chemicals, Inc., Baltimore, Md. Coparaffinate is a mixture of water-insoluble isoparaffinic acids partially neutralized with isocetyl hydroxybenzyl-dialiphatic amines. The ointment contains 17 percent coparaffinate and 4 percent titanium dioxide in a base consisting of beeswax, cetyl alcohol, lanolin and petrolatum.

More recent studies indicate its effectiveness also in the treatment of otitis externa and pruritis and vulvae. In one study of 700 patients suffering from otitis externa, Coparaffinate was found to be "far superior to any other medicament used for that purpose." According to the study, the advantages of non-toxicity, local anesthesia and bactericidal action resulted in an impressive and rapid response in those patients undergoing treatment. Another study reporting the results of 168 cases of pruritis ani and/or pruritis vulvae treated with Coparaffinate, it is concluded that this preparation is of definite value in the treatment of these conditions. A group of 75 patients with ulcerations of the lower extremities, and with either proven or suspected mycotic infection was also treated with this preparation with good results. A summary of these clinical studies appears in *South. Med. J.* 44:42 (Jan.) 1951.



ABBO-VAC AND NON-VAC . . . are containers designed for collecting, storing and dispensing whole blood. Both products are available from Abbott Laboratories. The Abbo-Vac container, with a high, mechanically-induced vacuum, is constructed in two sizes. One draws 480 cc. of blood into 120 cc. of A-C-D solution (Formula B, U. S.P. and N.I.H.), making a total of 600 cc. The other draws 240 cc. of blood into 60 cc. of A-C-D solution, making a total of 300 cc. A self-sealing stopper and dust-proof seal protect the blood against contamination during transportation and storage and keep it ready for immediate administration. Bottles are available in cases of six.

A blood donor set designed for collecting blood with Abbo-Vac consists of a 24-inch length of non-collapsible plastic tubing with 15-gauge bottle needle on one end and 17-gauge donor needle on the other.

Non-Vac is available in the same two sizes as Abbo-Vac and is designed for the collection of blood by gravity. Donopak-24 and Donopak-48, with or without disposable needles, are designed for the collection of blood with Non-Vac. They cannot be used when vacuum is employed.

* * *

CHLOROMYCETIN . . . for ophthalmic use is now supplied by Parke, Davis and Company in powder form for solution and as a one percent ointment. Since the antibacterial spectrum of Chloromycetin includes the majority of eye pathogens, these preparations are useful prophylactically following surgery or removal of foreign bodies, or in the treatment of certain forms of bacterial conjunctivitis and other eye conditions.

* * *

CHLOROMYCETIN CREAM . . . containing one percent Chloromycetin in a water-miscible ointment base, is available from Parke, Davis and Company in one ounce dispensing tubes. The cream, for topical application, is useful in many superficial infections and dermatological conditions complicated by secondary infections such as a superficial pyoderma, impetigo, acute folliculitis, seborrheal-like streptodermis, and infectious eczematoid dermatitis; also for dressing surgical wounds.

*

TIMELY DRUGS

DODEX A-B-D DROPS . . . also containing vitamin B₁₂, is a multivitamin nutritional supplement especially for infants and children. Supplied by Organon, Inc., it is stated that the usual dose of 0.6 cc. of Dodex A-B-D Drops contains: 5 micrograms of vitamin B₁₂, 1 mg. of thiamine hydrochloride, 0.25 mg. of riboflavin, 1 mg. of pyridoxine hydrochloride, 2 mg. of panthenol (equivalent to 2 mg. of calcium pantothenate), 10 mg. of niacinamide, 5,000 U.S.P. units of vitamin A, and 1,000 U.S.P. units of vitamin D.

Dodex A-B-C Drops are easily miscible with milk, formula, fruit juices, cereals, soups, or other liquid or semi-liquid foods. These Drops have little, if any effect on the flavor of foods with which they are mixed, and can often be given without the patient's knowledge. Vitamin D is slightly more effective when mixed in milk than when given in oily media, and vitamin A also is more efficiently utilized in the form provided in Dodex A-B-D Drops than when supplied in oily vehicles. Since the vitamins A and D supplied in Dodex A-B-D Drops are pure substances, there is no fishy taste or smell, nor are there the disagreeable eructations which frequently follow the administration of vitamins A and D in fish oils.

* * *

ESKAPHEN B . . . now available as tablets as well as an elixir, offers a new dosage form of Smith, Kline and French's combination of phenobarbital and thiamine hydrochloride. It is designed especially for use in mild vitamin B₁ deficiencies, and in the symptomatic treatment of neurasthenic conditions characterized by anorexia, disturbed sleep, subjective fatigue, irritability and emotional instability. Eskaphen B offers the advantages of a double therapeutic action—therapeutic relaxation and restoration of appetite. The recommended dosage is two to six tablets daily, in divided doses.

* * *

HYDROLOSE . . . is a bulk increasing laxative in syrup form. Each 5 cc. of Hydrolose syrup contains one gram of pure synthetic gum methylcellulose. The adult dosage is one tablespoonful morning and evening followed by a glass of water.

Children should receive one or two teaspoonfuls with water once or twice daily. Hydrolase syrup is available from The Upjohn Company.

* * *

ORETON-M BUCCAL TABLETS . . . is methyltestosterone U.S.P. in polyhydrol, a unique solid solvent for steroid hormones. Oreton-M Buccal tablets are made with an especially prepared polyhydrol base, which permits absorption of methyltestosterone directly into the systemic circulation through the buccal and sublingual mucosae. Bypassing the liver and the portal circulation, the active hormone is carried directly to the tissues. The considerably higher proportion of therapeutically available active hormone compares favorably with an injection of testosterone propionate. The tablets are indicated in androgen deficiencies, such as prepuberal hypogonadism or eunuchoidism, and the male climacteric or functional hypogonadism of middle age.

After initial standardization of the patient by means of Oreton injections, patients may be maintained on one-half to one 10 mg. Oreton-M Buccal tablet daily. In some cases, one-half an Oreton-M Buccal tablet three times weekly will be sufficient. The tablets are administered by placing well into the lower buccal space, adjacent to the buccal surface of the gums, opposite the first molar tooth. The tablet is absorbed in 30 to 60 minutes. The patient may talk or swallow *ad-libitum*. Tablets do not stimulate salivation. Midmorning, mid-afternoon and before retiring are the best times for administration of this medication.

* * *

TRUOZINE TABLETS WITH PENICILLIN . . . is a combination of the sulfonamides and penicillin available from Abbott Laboratories, either as Dulcet or plain tablets. Truozine Dulcet-tablets are lavender-colored, fruit-flavored, candy-like cubes, made especially for children. Each Dulcet tablet contains 0.1 Gm. of sulfadiazine, sulfamerazine and sulfamethazine (total of 0.3 Gm.) and 50,000 units of penicillin G potassium. Each plain Truozine tablet contains 0.167 Gm. of sulfadiazine, Sulfamerazine and sulfamethazine (total of 0.5 Gm.) and 150,000 units of penicillin G potassium. The tablets are white, flat and grooved.

This combination is indicated for the treatment of infections caused by organisms susceptible to penicillin or sulfonamides. It has been suggested that simultaneous administration of combined sulfonamides and oral penicillin produces alternating blood level peaks, reducing the danger of

development of bacterial resistance to any of the agents administered.

The recommended dosage for children is three or four Dulcet tablets initially, followed by one or two tablets every four hours. For adults, four plain tablets initially is recommended, followed by one or two tablets every four hours.

* * *

VARIDASE . . . Lederle's combination of Streptokinase and Streptodornase, has recently been made available. This new enzyme product dissolves clotted blood, viscous pus, and fibrinous accumulations within the body. It is useful in surgery and in skin grafting by aiding in the removal of dead tissue and hastening tissue regrowth. Furthermore, it clears the way for treatment with Aureomycin and other antibiotics. Streptokinase serves to activate an enzyme in the human serum which reacts on fibrin and brings about a rapid dissolution of blood clots and fibrinous exudates. Streptodornase, an enzyme, acts directly on the main constituents of pus that constitute 30 to 70 percent of the sediment of purulent exudates. Varidase has no effect on living cells and may be injected directly into a body cavity or applied locally. It is recommended for intravenous use.

Varidase is supplied in single dose vials for topical or local administration wherever clotted blood, fibrinous or purulent accumulations are undesirably present following injury or inflammation. Each vial contains 100,000 units of Streptokinase and 25,000 units of Streptodornase which should be diluted with 10 to 20 cc. of buffered physiological saline solution depending on the concentration of enzymes desired for treatment. The material is introduced directly into the cavity, or on to the area affected.

At the present time the clinical value of Varidase has been established for the treatment of postoperative hemothorax; traumatic hemothorax; hematomas; postpneumonic, loculated empyema; other bacterial empyemas, including tuberculous empyema; and chronic suppurative conditions, such as draining sinuses, osteomyelitis, infected wounds or ulcers, suppurative tuberculous adenitis, sinusitis, otitis media and arthritis.

Certain precautions must be taken when using Varidase. It must not be administered intravenously. Patients should be observed carefully during the period of therapy. Clinical judgment must be exercised as to individual points in treatment, such as dosage, repetition of treatments, methods of application and evaluation of effect. The physician should be acquainted with both the theory of the action of these enzymes and the details of cases found in published clinical reports.

CURRENT LITERATURE

Edited by SISTER MARY ETHELDREDA, St. Mary's Hospital, Brooklyn, N.Y.

AMERICAN PROFESSIONAL PHARMACIST

APRIL, 1951—"Let the Pharmacist Do It," by Perrin Statia. A Canadian hospital pharmacist presents his views on why the pharmacist should supervise sterilization and direct the Central Supply Unit in the hospital. The author also advises more bulk compounding. *page 448*

JUNE, 1951—"Professional Bulletins for Pharmacists," by Madeline Oxford Holland. Describes the value of regularly issued individualized bulletins for physicians as an important promotional tool for better inter-professional relations. Samples of bulletins prepared by retail and hospital pharmacists are illustrated. *page 531*

"Patterning Internships Away from Teaching Centers." This article explores some practical considerations in establishing training programs adaptable for the average hospital pharmacist. *page 556*

"In Sterilizing Parenteral Solutions," by Morris Kantor. Describes a device helpful in sterilizing rubber-stoppered vial units. *page 562*

HOSPITAL MANAGEMENT

APRIL, 1951—"Preparation and Use of the Hospital Formulary," by Richard S. Hawkes. Presented at the 1951 New England Hospital Assembly by an M.D. who is chairman of the Pharmacy Committee at Maine General Hospital, Portland. The author relates his experiences in the preparation of a formulary. *page 80*

"Numerical Summary of Replies by New England Hospitals to Pharmacy Questionnaire of November, 1950." Includes Statistical results of survey. *page 82*

MAY, 1951—"Application of Formulary to Small Hospital," by Thomas E. Kinnane, Jr. The author, administrator of Sharon Hospital, Sharon, Conn., outlines in detail the procedure for applying the formulary system in a small hospital. *page 106*

JUNE, 1951—"The Hospital Pharmacy in Action," by Edith M. Loustalet. Describes a typical day in the hospital pharmacy at Hollywood Presbyterian Hospital, Los Angeles, Calif. *page 80*

"The Pharmacist as An Ally of the Medical Service," by Sister Mary Junilla, O.S.F. In a paper presented at the Pharmacy Section of the Convention of the Western Hospitals Association, the author outlines several ways in which the hospital pharmacist may improve hospital service. *page 81*

HOSPITALS

MAY, 1951—"Constructive Criticism of the Hospital Pharmacy," by J. Harold Jones. A summary of the findings resulting from a survey of Indiana hospital pharmacies in relation to the regulations of the Division of Food and Drugs of the Indiana State Board of Health. *page 43*

JUNE, 1951—Part II of the June issue of *Hospitals* is known as the "Administrators Guide Issue." It contains a section on Management Guides including Pharmacy under which the following topics are discussed: Minimum Standards, Recommended Areas for the Department, Prescription Records, Drugs Carried on Nursing Units, After-hours Calls, Purchasing Regulations, Records and Reports, Accounting Records, Internships in Pharmacy, Management Check List and Selected Bibliography. *page 57*

SOUTHERN HOSPITALS

MAY, 1951—"Pharmacy's Contribution to Adequate Standards," by Robert P. Fischelis. Presented at the Southeastern Hospital Conference in St. Petersburg, Fla. A brief description of the program developed by the A.Ph.A. and the ASHP toward implementing the *Minimum Standards of Pharmacies in Hospitals*. *page 62*

JUNE, 1951—"With the Hospital Pharmacist," by Joe Vance. Discusses Blue Cross plans and reports on a recent salary survey of hospital pharmacists in the Southeastern states. *page 50*

MODERN HOSPITAL

JUNE, 1951—"The Treatment of Common Skin Diseases," by C. C. Pfeiffer. A concise presentation of commonly used formulae in the treatment of skin disease. *page 106*

NOTES AND SUGGESTIONS

Edited by GEORGE L. PHILLIPS, *University Hospital, Ann Arbor, Michigan*

Coal Tar Ointments

Many dermatologists contend that coal tar ointment, especially those containing zinc oxide in combination, reach their maximum efficiency only when allowed to age or ripen. Some basis for this contention may be found in the possible reaction between the zinc oxide and organic acid derivatives present in crude coal tar which is obtained from the destructive distillation of coal. Formulas of this type are as follows:

GUY'S CRUDE COAL TAR OINTMENT

Crude Coal Tar	7.0 Gm.
Burow's Solution	17.0 cc.
Hydrophilic Petrolatum, U.S.P.	33.0 Gm.
Lassar's Paste	43.0 Gm.
To make	100.0 Gm.

Take up the Burow's solution in the hydrophilic petrolatum, then add the other ingredients and mix thoroughly. Age at least two weeks before using.

WHITE'S CRUDE COAL TAR OINTMENT

Crude Coal Tar	5.0 Gm.
Zinc Oxide	5.0 Gm.
Corn Starch	45.0 Gm.
Petrolatum	45.0 Gm.
To make	100.0 Gm.

Mix the crude coal tar and zinc oxide and allow to stand for at least twenty-four hours. Mix the corn starch and petrolatum, then mix in the crude coal tar—zinc oxide combination. Mill until smooth.

Ointment for Ringworm

The following formula has been used quite successfully in the treatment of ringworm:

Salicylic Acid	0.5 Gm.
Iodine	0.5 Gm.
Sulfur, precipitated	5.0 Gm.
Triethanolamine	6.0 Gm.
Zinc Undecylenate	20.0 Gm.
Undecylenic Acid	5.0 Gm.
Washable Base	63.0 Gm.
To make	100.0 Gm.

Dissolve the iodine in the triethanolamine. Triturate the powders with a small amount of the washable base and finally combine and mix all ingredients. Mill if necessary, using stainless or porcelain grinder plates.

Sodium Hypochlorite Powder

Sodium hypochlorite powder for making Modified Dakin's Solution, U.S.P. is available from The Sanox Company, 2647 Robinwood, Toledo 10, Ohio.

Deodorant Solution

Refill solution for wick type room deodorant bottles may easily be prepared as follows:

Chlorophyll (water soluble)	2.25 Gm.
Distilled Water	50.00 cc.
Alcohol (Propyl or Ethyl)	50.00 cc.
Formaldehyde, 37%	12.50 cc.

Mix the first three ingredients and when the chlorophyll is dissolved add the formaldehyde with stirring.

Protection for Formula Cards

Plastic envelopes or covers to protect your working formula cards or sheets are available in all sizes from the Transparent Shade Company, 501 North Figueroa Street, Los Angeles 12, Calif.

The following three formulas were submitted for your consideration and trial by Walter Frazier, chief pharmacist, Springfield City Hospital, Springfield, Ohio:

Anesthetic Lubricant

Intracaine Hydrochloride	2.0 Gm.
Methylcellulose Powder, 4000 cps	1.0 Gm.
Butyl <i>Para</i> -hydroxybenzoate	0.015 Gm.
Methyl <i>Para</i> -hydroxybenzoate	0.13 Gm.
Distilled Water	100.0 cc.

Dissolve the preservatives in 75 cc. of the water which has been heated to boiling. Use 25 cc. of this solution while hot to wet the methylcellulose. Cool the remainder of the preservative solution before adding to the wet methylcellulose, shake, and place in a refrigerator until a clear solution of the methylcellulose is obtained. Add the Intracaine hydrochloride which has previously been dissolved in the remaining 25 cc. of distilled water and mix thoroughly. Autoclave fifteen minutes at 121° C. in 30 cc. wide mouth tightly capped bottles or in an Erlenmeyer flask covered with glassine paper and gauze. Pour into sterile jars.

Baby Cream

Cetyl Alcohol	0.9 Gm.
Stearic Acid	9.0 Gm.
Hydrogenated Vegetable Oil	4.5 Gm.
Liquid Petrolatum	4.5 Gm.
Lanolin, Anhydrous	3.6 Gm.
Borax	1.35 Gm.
Triethanolamine	1.35 Gm.
Distilled Water	75.0 cc.

Heat the cetyl alcohol, stearic acid, vegetable oil, petrolatum and lanolin together until melted and cool to 65° C. Dissolve the borax and triethan-

olamine in the distilled water. Add the aqueous solution to the oil phase slowly while being stirred continually in a mixer. Stir until cool.

Baby Lotion

Sodium Alginate	3.5 Gm.
Butyl <i>Para</i> -hydroxybenzoate	0.1 Gm.
Methyl <i>Para</i> -hydroxybenzoate	0.9 Gm.
Distilled Water	670.0 cc.
Triethanolamine	5.0 Gm.
Stearic Acid	9.0 Gm.
Stearyl Alcohol	9.0 Gm.
Cetyl Alcohol	5.0 Gm.
Lanolin, Anhydrous	10.0 Gm.
Liquid Petrolatum, light	300.0 cc.

Dissolve the preservatives in hot distilled water. Transfer this solution to a continuous mixer and dust on the sodium alginate while mixing. Add the triethanolamine and stir until the liquid cools to 70° C. Heat the stearic acid, stearyl alcohol, cetyl alcohol, lanolin and petrolatum together until melted and cool to 70° C. With the temperature of both liquids at 70° C., slowly pour the oil phase into the water phase while mixing continuously with a mixer. Stir until cool.

Cortisone Acetate Preparations

Orders for small, oral doses of cortisone as are often required for children or in the treatment of Addison's disease, etc., may be filled in a variety of ways including the following:

CORTISONE ACETATE TABLETS, 5.0 mg.	
Cortisone Acetate Tablets, 25 mg.	60.4 Gm.
(200 tablets contain 5.0 Gm. of cortisone acetate)	
Lactose	61.6 Gm.
Starch	10.0 Gm.
Magnesium Stearate	3.0 Gm.
Talcum	5.0 Gm.
Total weight	140.0 Gm.

Powder the tablets and sift them through a No. 40 sieve, then mix thoroughly with the lactose and starch. Granulate through a No. 12 hand screen using a two percent solution of methyl cellulose, 1500 cps (approximately 15 cc.) to moisten. Dry and reduce through a No. 14 or No. 16 hand screen. Add magnesium stearate and talcum, mix or tumble thoroughly and punch, using a slotted 5/16 inch punch and die set. This formula is for one thousand 5 mg. tablets.

CORTISONE ACETATE SUSPENSION IN CHERRY SYRUP

Thoroughly mix the suspension of cortisone obtained from the cortisone acetate injection with standard syrup of cherry in any concentration desired.

CORTISONE ACETATE SUSPENSION IN CHOCOLATE SYRUP

Directions as above using standard chocolate syrup.

Continuing requests for cortisone eye ointment, coupled with reports of "stinging and burning" due to the use of cortisone in Carbowax as previously suggested in this column (Sept.-Oct., 1950, page 287), has led to the use of the following formulation:

CORTISONE ACETATE OINTMENT, 2.5 mg. per Gm.

Anhydrous Wool Fat	150.0 Gm.
Cortisone Acetate Injection (25 mg./cc.)	20.0 cc.
Water for Injection, U.S.P.	30.0 cc.

Sterilize the wool fat by heating to 100° C. for thirty minutes. Then cool to 75° C. and add the cortisone and water and mix thoroughly. Rub out on a sterile pill tile until perfectly smooth, then pack aseptically into sterile, four gram ophthalmic ointment tubes.

Ampul Washer

At last a custom built ampul washer is available in several sizes at a reasonable cost. The model described to us by Miss Geraldine Stockert, chief pharmacist, Monmouth Memorial Hospital, Long Branch, N. J. has the following specifications. Capacity: 132 ampuls from 0.5 cc. to 30 cc. size, or vials through 20 cc. size. Size: approximately 13 x 14 inches outside dimensions and 5 inches in height. Cost: \$50.00 to \$60.00 per complete unit. Larger size base to accommodate larger vials would cost only a few dollars more.

For further information, contact the manufacturer, Sterling S. Green, Box 3669 Terminal Annex, Los Angeles 54, Calif.

Aerosol O.T.

Aerosol O.T., the dioctyl ester of sodium sulfosuccinate, is a surface active or wetting agent which is useful as a cathartic. It may be used singly or in combination in constipated patients with hard marble-like stools; for patients with constipation who are strictly confined to bed with such conditions as poliomyelitis, paralysis and post-operative conditions; and in patients with megacolon or fecal impaction. Aerosol O.T. is used in the form of a one percent aqueous solution and is administered either orally or rectally. The oral dosage for adults is one cc. twice a day in milk or orange juice. Children under one year are given 0.2 cc. while those up to five years of age are given 0.5 cc. For rectal use in adults, two cc. of the one percent solution of Aerosol O.T. is added to a small saline or mineral oil retention enema. For children over one year of age one cc. is used while for those over five years old, two cc. is added to the enema.

Aerosol O.T. may be obtained from the American Cyanamid Company, 30 Rockefeller Plaza, New York City 20, or from the local laboratory supply houses. A reference to Aerosol O.T. is the *J. Ind. Hyg. and Toxicol.*, 25:175 (May) 1943.

as the president sees it

I. THOMAS REAMER

Duke Hospital, Durham, N. C.



It is with a keen sense of regret that I bend my humble efforts toward my last issue of the President's Page. No longer will Mr. Francke send me special delivery air-mail letters to remind me that the printers are waiting to complete my page so that *THE BULLETIN* may go to press. Reamer and Bowles bow out and Walter Frazier and Jane Rogan take over for the new year which begins at Buffalo.

There are so many things to write about—the splendid work of all the committees, the Institutes at Ann Arbor and Milwaukee last summer, the Institutes at Philadelphia and New Orleans this year, the wonderful group of the Southeastern Society with the Fontana Dam and St. Petersburg meetings, the Executive Committee meeting at Atlantic City and conferences with Don, Gloria and Dr. Fischelis in Washington.

I am anxious at present to promote the interests of the American Institute of the History of Pharmacy which has headquarters at the University of Wisconsin School of Pharmacy in Madison, Wisconsin. Although it has been organized for only ten years; it has, by its achievements, justified its assumption of the necessity for a permanent institution devoted exclusively to the cultivation of research in and information about the historical aspects of pharmacy. It is succeeding in making the American profession of pharmacy history and tradition-conscious, and in elevating teaching of the history of pharmacy and pharmaceutico-historical work in this country from incidental amateurism to a scientific approach, according to George Urdang, Director of the Institute.

The following paragraph which was part of an editorial which appeared in the November 11, 1950 number of *The Pharmaceutical Journal* (British) gives some of the reasons for a background of historical study.

"A pharmacist who has studied the history of

his profession is a better member both of the profession and of society as a result of his discipline, for the concept of the history of pharmacy is cultural and humanitarian in that the individual facts of pharmacy as a profession can only be perceived in the general context of society and the life of the community. Pharmacy touches and is touched by the entire environment in which it is practised, an environment of peoples, cultures and sciences throughout the ages. It is this fact which makes the history of our profession so rich and all-embracing and the pursuit of such a study results in elevating the student to be a citizen of the world of culture, a member of the army of cultured people forming the intellectual elite of the world. The supplying of drugs to the people has been carried out through the ages and all the branches and phases of this supply are the concern of the history of pharmacy; the basic sciences are a natural background, but so, too, are economics, law and legislation, the fine arts, the classics, language, literature, general history and philosophy, all have made some impact upon pharmacy and upon the science and practice of the profession."

I would urge that all of you subscribe to the efforts of this Institute by applying for a membership which is only five dollars per year. You will receive a large number of publications at once and as new material is published it will be sent to you.

It has been the most pleasant year of my pharmaceutical career serving as your president. The splendid spirit of cooperation which I have encountered has made it a year filled with a treasure-chest of happy memories. Hospital Pharmacy is still an infant toddler of less than ten years as a Society organization. Support your local, state, district, sectional and national activities and you will continue to be proud of the American Society of Hospital Pharmacists.



A.S.H.P. AFFILIATES

Members of the AKRON AREA SOCIETY OF HOSPITAL PHARMACISTS met for the last official meeting of the 1950-1951 year on May 8 at St. Elizabeth Hospital in Youngstown. Following the meeting, those present had an opportunity to tour the pharmacy department where Sister Jeanne Marie is chief pharmacist.

The NORTHERN CALIFORNIA SOCIETY OF HOSPITAL PHARMACISTS held its June meeting at St. Mary's Hospital in San Francisco. Included on the program was a film depicting the practice of pharmacy in France narrated by Dr. Jean Defrenois, University of California College of Pharmacy.

Nine members and seven guests were present at the May meeting of the WISCONSIN SOCIETY OF HOSPITAL PHARMACISTS held at Sacred Heart Sanitarium in Milwaukee. Tentative plans were discussed for holding a meeting of the Wisconsin Society in conjunction with the convention of the State Pharmaceutical Association in September. Sister Gladys Robinson, president, was appointed official delegate to the ASHP annual meeting.

"Chronic Barbiturate Intoxication" was the title of movie shown by Sister M. Blanche.

"Inter-Departmental Relations in the Hospital" was the subject of a discussion at the April meeting of the SOCIETY OF HOSPITAL PHARMACISTS OF GREATER CINCINNATI. Meeting at the Jewish Hospital, Mr. Robert Carney, executive assistant director, was the speaker.

At the May meeting held at Hotel Sheraton-Gibson, the role of the hospital pharmacist in the Civil Defense program was covered with emphasis on the distribution of medical and related supplies.

Miss Alice Ritchie, formerly chief pharmacist at Christ Hospital in Cincinnati and a charter member of the ASHP, has been appointed delegate to the annual meeting being held in Buffalo in August.

Members of the MASSACHUSETTS SOCIETY OF HOSPITAL PHARMACISTS met at the Parker House in Boston on May 16. Dr. Roger A. Lewis of Hoffman-La Roche spoke on

the new analgesic drugs with special reference to the synthetic substitutes for morphine.

A dinner honoring Dean Thomas Rowe of Rutgers University College of Pharmacy was held by the NEW JERSEY SOCIETY OF HOSPITAL PHARMACISTS in conjunction with the regular May meeting. It was held at Mountainside Hospital in Montclair with Mrs. Anna C. Richards as hostess. Guests attending the dinner in addition to Dean Rowe were Mr. Louis Kazin, director of Pharmaceutical Extension at



Dean Rowe is presented a clock by the New Jersey Society of Hospital Pharmacists. Left to rights Mr. Louis Kazin, Larry Pesa, Dean Rowe, Mrs. Anna Richards and Dr. Thomas Fleming.

Rutgers University; Dr. Thomas Fleming and Mr. James L. Smart of Hoffmann-La Roche; Mr. Al Mannino of McKesson and Robbins; and Mr. Herbert L. Flack, chief pharmacist at Jefferson Medical College Hospital in Philadelphia. On honoring Dr. Rowe who is leaving New Jersey to head the University of Michigan College of Pharmacy at Ann Arbor, the New Jersey Society expressed appreciation for his sympathy, guidance and cooperation during the past years.

Following a discussion of employment problems and salaries for hospital pharmacists, a committee was appointed to study the possibility of establishing a fair schedule of salaries in New Jersey and to also serve as an employment bureau. Members of the committee are Charlotte Samuels, Hackensack Hospital, Hackensack; M. Goldman, Passaic General Hospital, Passaic; H. Falk, Barnert Memorial Hospital, Paterson; and Eugene Friedman, Mercer Hospital, Trenton.

(Continued on page 268)

New Members

June 29, 1951

ALABAMA

Barry, Paul P., 768 South Perry, Montgomery
Glenn, Howard D., Langdale
Lyman, Bennie T. Jr., Box 28, V. A. Hospital, Tuskegee
May, Oma Dell, Druid City Hospital, Tuscaloosa
Tubb, Proctor V., 809—11th Ave., So., Birmingham

ARKANSAS

Featherston, Lauren R., 300 Prospect, Hot Springs
Leonard, Loren J., Rte., No. 1, Hyway 45 E., Fayetteville

CALIFORNIA

Fong, Martha, 337 Oakland Ave., Oakland

FLORIDA

Alonso, Wesley J., 4520 Dartmouth Ave., St. Petersburg
Meyer, Mardis, 100 N. W. 17th St., Miami

GEORGIA

Hancock, Marie J., Little Griffin Hospital, Valdosta
Henderson, Carter B., 1461 Wessynton Road, N. E., Atlanta

Merlin, Libbie, 1821 N. Springs Road, N. E., Atlanta

ILLINOIS

Bilicke, Samuel A., 647 E. 75th St., Chicago
Gordon, Morris, 2102 S. 20th Ave., Broadview
Rush, Raymond, 502 S. Hill, Marion
Stutsman, Harold O., Aledo

IOWA

Gregg, Robert M., 1600 - 3rd Ave., S. E., Cedar Rapids

KANSAS

Lindmark, William D., 1134 Orleans, Topeka

MAINE

Preble, Carl S., Dudley Town, Hampden

MARYLAND

Patterson, Belle, Johns Hopkins Hospital, Baltimore

MASSACHUSETTS

Cook, Robert F., 21 Cavanagh Road, Wellesley
Grady, William F., 87 Murray Ave., Worcester
Rothstein, Saul M., 148 Beacon St., Framingham
Seligman, Joseph H., 97B Elm Hill Ave., Roxbury

MICHIGAN

Hamburger, Henry H., 1035 W. Grand River, East Lansing

Magee, Mary Ann, University Hospital, Ann Arbor
Puchkoff, David, V. A. Hospital, Ft. Custer
Silverthorn, Irene B., 1405 E. Park Place, Ann Arbor
Sister Daniel Joseph McMahon, 900 W. Water, Hancock

MINNESOTA

Brecht, Dorothy V., 1105 W. 28th St., Minneapolis
Levin, Sam D., 903 Newton Ave., Minneapolis
Mornik, Arlene, 3244 Sandeen Road, St. Paul
Wittich, Gordon W., 4508 Oakland Ave., Minneapolis

MISSISSIPPI

Brookshier, James T., 471 Roland, Jackson
Cameron, Inez O., 3612 N. Haven Drive, Jackson

MISSOURI

Bloome, Lyndal A., 655 Majesty Ct., Lemay
Easter, Joseph H., 4354 Enright, St. Louis
Sister Mary Tarcissa Reinhold, St. Mary's Hospital, 6420 Clayton Rd., St. Louis
Smith, Harold W., 447 Lester, Poplar Bluff

NEW JERSEY

Brown, Joseph, 178 Princeton Road, Audubon
Reibel, Anna M., 352 Martin Road, Union
Weiss, Lester H., 10 Ridgedale Ave., Madison (A)

NEW YORK

Ayer, Bessie J., 245 Kenmore, Buffalo
Levy, Sol, 521 Clarendon St., Syracuse
Lukaszewicz, John J., 719 Northampton St., Buffalo
Miller, Donald T., 315 University Park, Rochester
Perry, Thornton D., U. S. Naval Hospital, St. Albans
Riegel, Maxwell S., 54 North Ave., Oswego (A)

Safford, Ruth E., R. F. D. No. 1, Perry
Sister Mary Gertrude Boland, 323 E. 198th, New York (A)

Sister Veronica (Utz), 371 E. 150th St., New York (A)
Teplitsky, Benjamin, V. A. Hospital, Albany
Torre, Sylvia S., 254 Lemon, Buffalo
Walsh, Ruth E., 118 Kenton Road, Kenmore

NORTH CAROLINA

Colina, Gilberto D., 2605 Chesterfield, Charlotte
Collins, Doris G., 2318-B Ardmore Terrace, Winston-Salem

Darling, Andrew J., 34 Warwick Road, Asheville

OHIO

Albaugh, Martin G., 1060 Piermont Road, So. Euclid (A)
Beck, Corrine Z., 39 W. Hudson, Apt. C., Columbus
Buell, Clarence A., 817 Mason St., Toledo
Cestarc, Elizabeth J., 11501 Shaker Blvd., Cleveland
Gannott, Walter C., 263 East 330th, Willowick
Gilroy, Everett H., 525½ W. Spring, Lima
Haynes, Elizabeth W., 2055 E. 79th St., Cleveland
Honmyo, Jay Y., Aultman Hospital, Canton
Hovis, Jack V., 253 Vine, Salem
Iler, Jean Rae, 228 Oak St., Lancaster
Jack, Bernice J., 604 Broadway, Youngstown
Jaffee, Edythe F., Mercy Hospital, Toledo
Ricchiuto, Joan E., 1122 West 19th St., Lorain
Ruff, Nancy Ann, 1975 Ford Drive, Cleveland
Schall, Howard W., 1911 Kensington Ave., Youngstown

OKLAHOMA

Bruce, John B., 1015 College, Norman (A)
Clark, Ralph W., 920 Wilson, Norman (A)

PENNSYLVANIA

Darnell, Harold V., 640 N. Broad St., Philadelphia (A)
Diner, Ervin, 2451 S. 20th St., Philadelphia
Falcon, Michael J., 1477 Hampstead Road, Penn Wynne, Philadelphia (A)
Mancini, Romana, 1540 S. Carlisle St., Philadelphia
Pittman, Gerald S., 144 Ellis Road, Havertown (A)

RHODE ISLAND

Udell, Harold G., 1559 Smith, No. Providence

TENNESSEE

Stigler, Adele Cole, 15 N. Somerville, Memphis

TEXAS

Borth, Fred, Seton Hospital, 600 W. 26th., Austin
Costolow, Roy M., 6303 Sudbury, Dallas
Glass, James A., 2308 Eagle, Houston
Ham, Ruth R., 1003½ East 32nd, Austin
Henry, Charles R., 3119 Cridelle, Dallas
Lofgren, Frederick V., 4705 Eilers Ave., Austin (A)
Weller, Kenneth V., 456 Palmero Ave., Corpus Christi
Wilborn, Jack P., 2819 Arroyo Ave., Dallas

VIRGINIA

Lucero, Manuel, 3921 Caulder Court, Richmond

WASHINGTON

Horita, Yoko, 1300 E. Union, Seattle
Mendenhall, Audrey L., 4520 Tulane Place, Seattle
Nelson, Nora, 6319 - 5th Ave., N. E., Seattle

WISCONSIN

Sister M. Leocadia (Ridder), 1545 S. Layton Blvd., Milwaukee

WYOMING

Carson, James R., 928 Illinois, Sheridan

CANADA

Sister Corinne Michaud-Nadeau, Hotel-Dieu of St. Joseph, Edmundston, N. B.
Smedmor, Ethel J., 296 Mason Ave., Peterborough, Ont.

LEBANON

Haddad, Amin F., Acting Dir. of Sch. of Pharm., American Univ. of Beirut (A)

PHARMACIST



Edited by EDDIE WOLFE, Mt. Alto Veterans Hospital, Washington, D.C.

Vice Admiral Joel T. Boone, chief medical director of the Veterans Administration, recently paid tribute to the "unselfish cooperation and participation by all segments of organized pharmacy" in making possible the high calibre of medical care that now exists for veterans.

The occasion was the first showing of a twenty-foot exhibit of VA's pharmacy program at the 99th Annual Convention of the District of Columbia Pharmaceutical Association, held in Washington, D. C., on June 5.

Admiral Boone's comments follow:

"I have long been aware of the importance of pharmacy as a member of the medical team. During my years of service in the United States Navy, and especially during the two World Wars, I was conscious of the contributions made to the efficiency of the medical team and welfare of our fighting men by members of your profession serving as hospital corpsmen, medical technicians and pharmacy officers.

"The present status of the pharmacy program in the Veterans Administration is another indication of unselfish cooperation and participation by all segments of organized pharmacy in making possible over-all medical care meeting the highest standards. Continuing efforts by the pharmaceutical industry to develop new therapeutic agents and improve those already available have made advances in medicine during the past 20 years that could not have been anticipated by the most foresighted.

"Schools of pharmacy in their constant en-

deavor to keep abreast of the general trends in pharmaceutical education and the allied sciences have provided scientifically trained and competent professional personnel to man our many medical activities, and at present 375 registered pharmacists are providing excellent pharmacy service in V.A. hospitals and regional offices.

"Special tribute is due the National, State and local Pharmaceutical Associations, their officials and the thousands of retail pharmacies who have cooperated to provide hometown pharmacy service in parallel with our fee basis medical and dental programs. The contributions made by these groups become more impressive when it is noted that the retail pharmacies of the United States compounded in excess of $\frac{3}{4}$ of a million prescriptions for veterans receiving treatment for service-connected disabilities, during 1950.

"I would like to emphasize that my statement, 'pharmacy is a vital member of the Veterans Administration medical team, pledged to furnish medical care second to none for those who have served their country', appearing as a foreword to the pharmacy exhibit of the Veterans Administration is a reflection of my appreciation for the loyal services of pharmacy personnel presently on duty in the Veterans Administration and to those professional personnel in all branches of organized pharmacy who have made major contributions to our over-all medical program."

The VA pharmacy exhibit consists of a number of panels of color transparencies and text indicating the administrative and professional responsibilities of VA pharmacists. One section describes the operation of the hometown pharmacy program, following the course a prescription takes from the time it is written by the veteran's family physician, through the point where it reaches his neighborhood drug store, and finally tracing it to the State Pharmaceutical Association Review Committee.

The display will be available beginning in July for exhibition at conventions of professional societies and associations, pharmacy schools and colleges, and other interested groups. Arrangements for obtaining it may be made by writing to the chief medical director, veterans Administration, Washington 25, D.C., Attention: Chief, Pharmacy Division.



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(Continued from page 265)

The CLEVELAND SOCIETY OF HOSPITAL PHARMACISTS elected the following officers at the May 23 meeting: president, Walter Gannott, Huron Road Hospital, Cleveland; vice-president, Robert Sherwood, U. S. P.H.S. Hospital, Cleveland; secretary, Elizabeth Cestaric, St. Luke's Hospital, Cleveland; and treasurer, Robert Stockhaus, University Hospital, Cleveland.

On the suggestion of the president, Mrs. Evelyn Gray Scott, copies of the Constitution and By-laws as revised to conform with that of the state and national organizations, will be sent to each member of the Cleveland Society.

Don Francke, editor of THE BULLETIN and president-elect of the A.Ph.A. spoke on the Mission to Japan illustrating his talk with movies and photographs.

Members of the ARIZONA SOCIETY OF HOSPITAL PHARMACISTS actively participated in the annual State Pharmaceutical Association Convention held in Phoenix, May 6-9. Included on the convention program was a forum with the following hospital pharmacists participating: Eli Schlossberg, State Hospital, Phoenix; Sister Elizabeth Joseph, St. Mary's Hospital, Tucson; David Axelrod, St. Monica's Hospital, Phoenix; and Rex West, St. Joseph Hospital, Phoenix.

A folder given out at the convention outlined the objectives of the Arizona Society with historical data and activities of the organization during the past year.

The MARYLAND ASSOCIATION OF HOSPITAL PHARMACISTS met at the U. S. Marine Hospital in Baltimore on Saturday, June 23 at 2:15 P.M. Dr. John A. Scigliano, acting chief, Pharmaceutical Service, U. S. P. H. S. Hospital, outlined the system used for the control of narcotics, hypnotics and spirituous liquors in hospitals of the PHS. Mr. Finlay A. Morrison, visiting professor from Canada and a graduate student at the University of Maryland, presented a summary of the recent Institute on Hospital Pharmacy.

A review of vitamins in therapy was presented at the March meeting of the MIDWEST ASSOCIATION OF SISTER PHARMACISTS held at St. Margaret's Hospital in Hammond, Ind. The speaker was Dr. E. Ponczek, resident at St. Margaret's hospital. Included also on the program was a discussion of the antibiotics illustrated with slides by Dr. J. G. Gallagher, director of professional Service of Lederle Company.

Plans were made to hold a workshop program at a future meeting on Records and Reports and on Cost of Medications.

NEWS ITEMS

Association of Western Hospitals

Recognition of a hospital pharmacist's contributions to both hospital and pharmaceutical organizations was made when Sister Mary Junilla, chief pharmacist at Queen of Angels Hospital in Los Angeles was recently installed as president of the Western Conference of the Catholic Hospital Association. The role Sister Junilla has played in organizing pharmaceutical groups on the West Coast as well as participating in national activities is well known to hospital pharmacists.

The Conference was held in conjunction with the Convention of the Association of Western Hospitals in Los Angeles on April 29 through May 3, with more than three hundred in attendance. A hospital pharmacy section was also held at this meeting with arrangements made by the Southern California Chapter of the ASHP.



Installation of the new president of the Western Conference of the Catholic Hospital Association. From left to right at the speakers table: Sister Mary Thomasine, O.S.F., chairman of Convention program; Rev. John J. Flanagan, S.J., executive director, Catholic Hospital Association; Sister Providence, president Washington Council, Catholic Hospital Association; sister Mary Junilla, president-elect, Southern Council, Catholic Hospital Association; Sister Mary Liguori, president, Southern Council, Catholic Hospital Association; Rt. Rev. Msgr. John R. Mulroy, president, Catholic Hospital Association; Rev. Bernard C. Cronin, director of Hospitals, San Francisco; and Rt. Rev. Msgr. Thomas J. O'Dwyer, director of Hospitals, Los Angeles.

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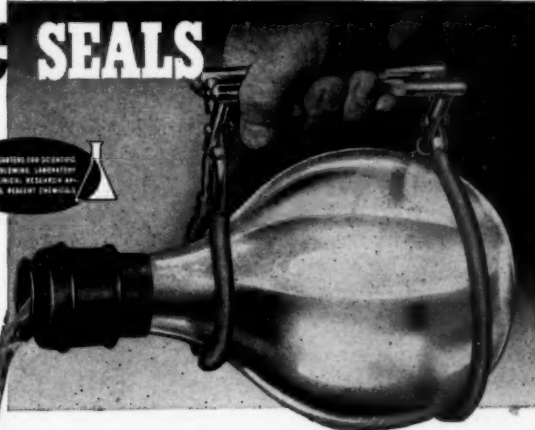
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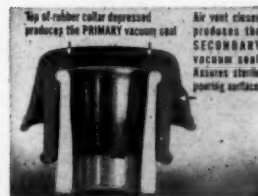
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Hospital Service in the United States

Hospital pharmacists will want to note the data given in the American Medical Association's annual report on "Hospital Service in the United States," appearing in the *J. Am. Med. Assoc.* 146: 109 (May 12, 1950). All registered hospitals, that is those meeting the requirements of the A.M.A.'s *Essentials of a Registered Hospital*, are listed by state giving type of service, ownership or control, beds, average census, bassinets, number of births and admissions.

Worthy of note is the fact that of the 6,430 registered hospitals having a total of 1,456,912 bed capacity, 4,713 are general hospitals with a bed capacity of 587,917. Also of interest to hospital pharmacists is the fact that 2,646 hospitals maintain an outpatient department, 1,043 of which are in governmental hospitals and 1,603 in non-governmental institutions.

Significant information is also given on approved schools for the various medical specialties as well as medical technologists, x-ray technicians, physical therapy and medical record librarians.

AHA Committee on Pharmacy

Members of the American Hospital Association's Committee on Pharmacy appointed to serve during 1951 include: Robert R. Cadmus, M.D., University of North Carolina, Chapel Hill, *chairman*; Don E. Francke, University Hospital, An Arbor, Mich.; Hans S. Hansen, Grant Hospital, Chicago; W. Arthur Purdum, Johns Hopkins Hospital, Baltimore; George C. Schicks, Hospital of St. Barnabas and for Women and Children, Newark, N. J.; and Joseph Snyder, Presbyterian Hospital, New York City.

Murphy Appointed Consultant

John T. Murphy, chief pharmacist of the Massachusetts General Hospital, has been appointed Consultant in Hospital Pharmacy at the Massachusetts College of Pharmacy. He is past-president of the Massachusetts Society of Hospital Pharmacists and is in charge of one of the most extensive hospital pharmacies in the United States. He brings to the staff of the College outstanding experience in this phase of pharmaceutical practice.

Minnesota Hospital Pharmacists Meet at Hospital Conference

Members of the Minnesota Hospital Pharmacists Association participated in the Upper Midwest Hospital Conference held at the Minneapolis Auditorium, May 16, 17 and 18. An exhibit, including the Model Hospital Pharmacy which was designed in accordance with the Suggested Plans for Hospital Pharmacies, attracted much attention from both administrators and pharmacists. Literature made available from the A.Ph.

A.'s Division of Hospital Pharmacy was distributed.

At a dinner meeting of the Minnesota hospital pharmacists on May 15, guest speakers were Mr. Henry Gregg, president of the A.Ph.A. and Mr. Don Francke, director of the Division of Hospital Pharmacy. Approximately 70 persons attended the meeting with Mrs. Blossom Jacobsen presiding.

Emphasizing the importance of unified efforts by every section of pharmacy, Mr. Gregg urged all present to join and support the work of the A.Ph.A. Mr. Francke, in an address on "Our Society, Past, Present and Future," outlined the development of the ASHP giving historical background and accomplishment of objectives to date.

Sister Junilla Honored

Sister Mary Junilla, chief pharmacist at Queen of Angels Hospital in Los Angeles and formerly treasurer of the ASHP, was recently honored by the Greater Los Angeles Chapter of the American Pharmaceutical Association, an Apothecary Jar, enscribed to Sister Mary Junilla, O.S.F. in recognition for outstanding service to the Chapter, was presented by Mr. George Jundt.



Presentation of enscribed apothecary jar to Sister Mary Junilla, O.S.F. by President George Jundt of the Greater Los Angeles Chapter of the A.Ph.A.

Catholic Hospitals Total 759

Catholic general hospitals in the United States now total 759 according to the official Catholic Directory for 1951, published by P. J. Kenedy & Sons, New York. These 759 hospitals have 99,573 beds.

New Secretary of AHA Council on Professional Practice

Charles U. Letourneau, M.D. has recently been appointed secretary of the American Hospital Association's Council on Professional Practice. Dr. Letourneau was first superintendent of the Queen Mary Veterans Hospital in Montreal and holds degrees in medicine and law. He received his Master's degree in Hospital Administration from Northwestern University in June.